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Owned and Published by



CHILTON COMPANY
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Publication Office **Editorial and Executive Offices**
Chestnut and 56th Sts., 239 West 39th St.
Philadelphia, Pa. New York, N. Y.

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Member, Audit Bureau of Circulations
Member, Associated Business Papers
Indexed in the Industrial Arts Index.
Published every Thursday. Subscription
Price: United States and Possessions, Mexico, Cuba, \$6.00; Canada, \$8.50; Foreign, \$12.00 a year.
Single copy, 25 cents. Cable Address, "Ironage, N. Y."



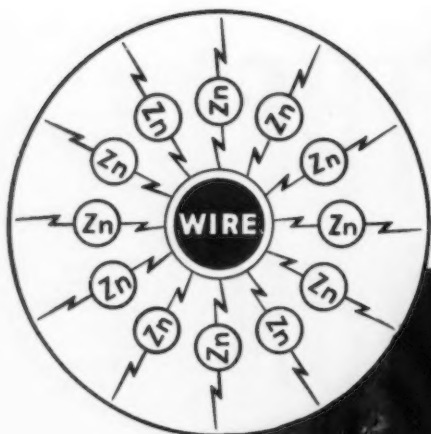
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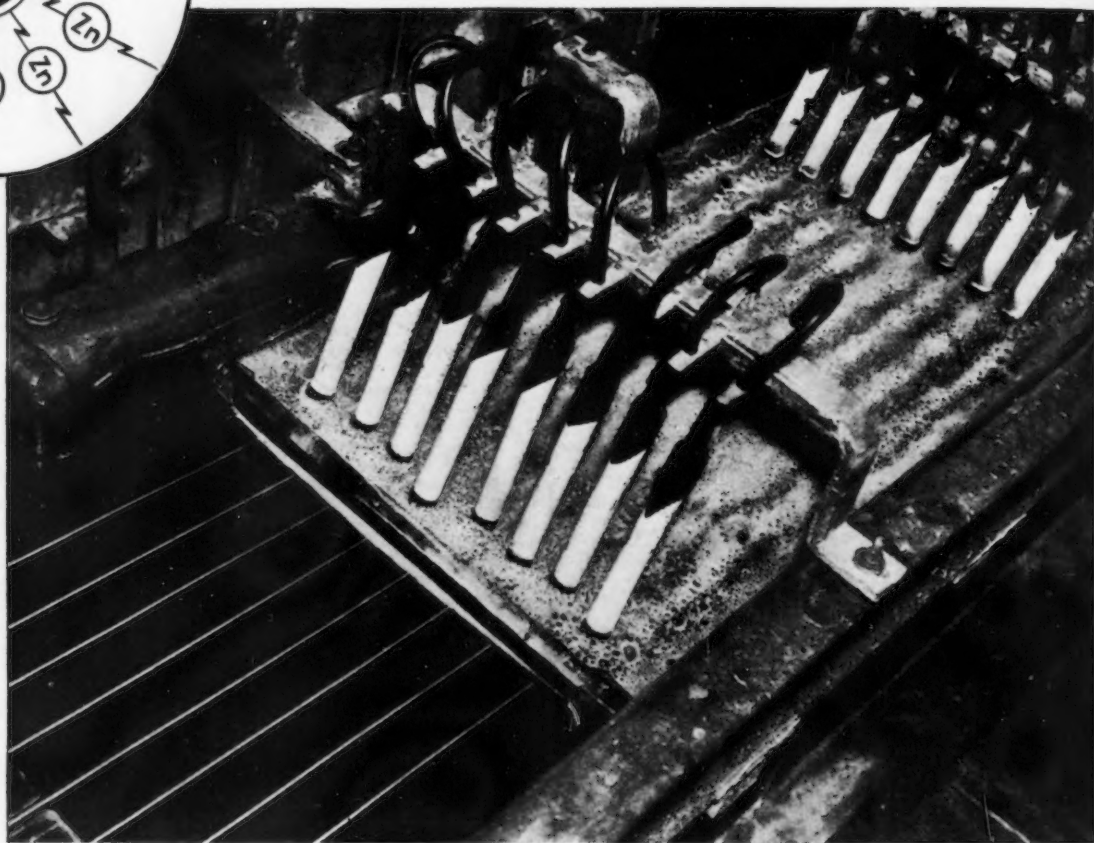
THE IRON AGE *Contents*

JULY 28, 1938

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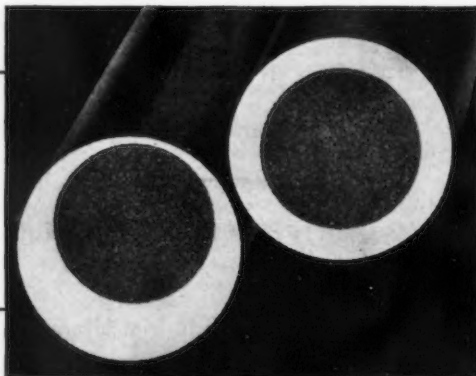
Why a Bethanized coating is **INEVITABLY** uniform



A unique feature of bethanizing is that it's just as natural and inevitable for a bethanized coating to be uniform in thickness as it is for the surface of water in a pan to be level. The electricity flows into all parts of the surface at the same rate and deposits the same amount of zinc everywhere on the wire. It is impossible to put on an eccentric coating by the bethanizing process.

This uniform thickness of the bethanized coating, the 99.99-per-cent purity of the zinc and the tight bonding that enables the coating to stand the most severe fabricating operations are steadily increasing the utility of zinc-coated wire. Bethanized wire is even serving satisfactorily in many applications where expensive alloys have heretofore been used.

**Uniform thickness
is vital in a
protective coating**



Whatever the total weight of zinc on wire may be, if the coating is eccentric it is no more effective than the thin part, as shown in exaggerated form on the left.

BETHLEHEM STEEL COMPANY

THE IRON AGE

ESTABLISHED 1855

JULY 28, 1938

Vol. 142, No. 4

How Much Is \$40 Billion?

BY this time next year, the national debt of the United States will be more than \$40 billion. Does that mean anything to you? Probably not, because billions are difficult to visualize for practical people who have to earn a living or meet a payroll.

Let's try to visualize \$40 billion.

At \$40 a ton, it would buy one billion tons of structural steel. If all the ingot producing capacity of the United States were kept busy at 100 per cent of capacity and if all of our steel finishing capacity could be applied to structurals, it would take about 20 years to produce this amount of steel.

One billion tons of structural steel would amount to $7\frac{1}{2}$ tons for each and every lineal foot of the earth's 25,000-mile circumference at the equator. That would be enough steel, if solid ground were available, to build an elevated highway around the world six times as wide or six times as heavy per mile as either the great Pulaski Skyway over the Jersey meadows or the West Side Highway in New York.

Nobody is every going to build such a highway, or to produce the steel that would be necessary for it. But if our national debt is ever to be paid, we, our children and our grandchildren will have to work for Uncle Sam—at no pay—sufficiently long to produce that equivalent.

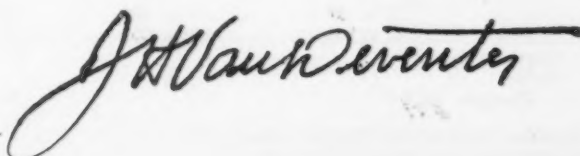
Or take this illustration as an example:

There are 420,000 miles of railroad track in the United States. Assuming that track ties are at 2 ft. centers, Uncle Sam has written I.O.U.'s sufficient to put \$40 on each railroad tie in the United States. Since by political ledgerdmain Uncle Sam's I.O.U.'s automatically become "U.O.Me's," future Americans will have to, figuratively speaking, dig up and slap down \$40 for each railway tie in the United States to take themselves out of hock.

If a man were given the job of walking the tracks and could pick up these I.O.U.'s at the rate of one every four seconds, or \$36,000 worth per hour, starting at the age of 16 and working 40 hr. per week, he would be 599 years old by the time he picked up the last one.

According to Biblical history, Adam was created 5942 years ago. If Adam and Eve had been thrifty enough to save six and one half million dollars per year, starting with the year of creation, and their descendants had followed suit, year after year up to 1938, the total sum, without interest, would now be enough to pay the national debt of the United States.

Now you begin to realize how much is \$40 billion. It's a lot when you have to pay it.



Molding Sands for Non-

MUCH has been written on the subject of molding sands for foundry work. Detailed methods of analysis, tests and classification of molding sands have been worked out by the Sand Research Committee of the American Foundry-

men's Association. Various classifications as to average grain fineness number, clay content, etc., have also been worked out. And there are numerous proposals as to systems of designating grain size distribution. In general these various publications deal

with foundry sand as a whole and not specifically with foundry sands for non-ferrous foundries.

It is not proposed here to review the published work on foundry sands, nor to outline the various test procedures for testing and analyzing foundry sands. It is simply proposed to describe some of the essential problems of the non-ferrous foundries in connection with foundry sands and to propose a set of specifications which in general will properly select sands for the non-ferrous foundries.

For many years, the foundry supply houses have supplied sands to non-ferrous foundries by various trade designations, a common designation being "Albany Sand." Albany Sands are further divided into various grades such as 00, 0, 1, etc. Unfortunately, however, these are not positive designations as to grain size or grain distribution, even as furnished by one supplier. The situation is additionally complicated by the fact that various suppliers classify their sands differently. A non-ferrous foundryman purchasing Albany No. 1 from one supplier may be using a considerably different sand than another non-ferrous foundry also purchasing Albany No. 1 from the same supplier. Thus, it is not to be wondered at that non-ferrous foundrymen in general as a result of this situation, do not talk the same language when they refer to the specific type of sand which they are using or which they recommend for use for a given job.

In June, 1925, a study of "Albany Molding Sands of the Hudson Valley" was made by Charles M. Nevin and published as New York State Museum Bulletin No. 263 of the University of the State of New York. This bulletin described the method used by the various suppliers in determining the designation to be applied to any particular load of sand. The publication also contained the results of fineness tests and clay determinations on some 60 samples of Albany Sand as furnished by some five different suppliers. In attempting to correlate these fineness tests, Mr. Nevin found it necessary to disregard the grade designation of the supplier and to plot the fineness tests

TABLE I
Grain Size Distribution for Various Albany No. 0 Sands
(Per Cent)

| No. | On 6 | On 12 | On 20 | On 40 | On 70 | On 100 | On 140 | On 200 | On 270 | Thru 270 | Clay |
|--------|------|-------|-------|-------|-------|--------|--------|--------|--------|----------|-------|
| 251... | | 0.04 | 0.06 | 0.04 | 0.54 | 1.60 | 6.34 | 8.98 | 19.58 | 39.62 | 24.08 |
| 203... | | 0.04 | 0.08 | 0.20 | 1.30 | 3.16 | 7.58 | 10.86 | 27.50 | 34.58 | 14.68 |
| 207... | 0.30 | 0.38 | 0.18 | 0.30 | 2.12 | 4.92 | 8.50 | 12.42 | 23.64 | 34.08 | 12.76 |
| 238... | | 0.04 | 0.02 | 0.12 | 0.62 | 2.20 | 7.80 | 12.04 | 26.42 | 32.74 | 18.24 |
| 244... | | 0.02 | 0.02 | 0.02 | 2.48 | 4.02 | 13.30 | 18.60 | 19.54 | 22.68 | 19.34 |
| 259... | | 0.04 | 0.08 | 0.12 | 0.50 | 6.74 | 29.34 | 21.44 | 22.18 | 15.28 | 4.46 |
| 211... | | 0.12 | 0.04 | 1.04 | 24.68 | 21.94 | 18.30 | 11.98 | 10.24 | 6.10 | 5.40 |

TABLE II
Grain Size Distribution for Various Albany No. 1 Sands
(Per Cent)

| No. | On 6 | On 12 | On 20 | On 40 | On 70 | On 100 | On 140 | On 200 | On 270 | Thru 270 | Clay |
|--------|------|-------|-------|-------|-------|--------|--------|--------|--------|----------|-------|
| 206... | | 0.04 | 0.10 | 0.42 | 3.50 | 3.04 | 3.54 | 4.38 | 16.08 | 44.77 | 18.92 |
| 240... | | | 0.10 | 0.34 | 1.02 | 4.48 | 11.70 | 15.82 | 27.68 | 26.64 | 12.26 |
| 241... | | | 0.04 | 0.32 | 1.06 | 4.16 | 15.04 | 21.64 | 28.64 | 20.76 | 7.88 |
| 255... | | 0.04 | 0.12 | 0.50 | 2.70 | 3.08 | 5.50 | 12.10 | 28.68 | 33.92 | 13.52 |
| 228... | | 0.10 | 0.14 | 0.44 | 6.50 | 15.06 | 16.16 | 14.98 | 18.86 | 17.68 | 9.96 |
| 250... | | 0.16 | 0.16 | 0.30 | 4.76 | 8.08 | 11.12 | 10.98 | 17.10 | 23.98 | 24.00 |
| 260... | | 0.22 | 0.10 | 0.40 | 1.88 | 10.24 | 27.12 | 19.46 | 16.16 | 14.10 | 10.24 |
| 364... | | 0.06 | 0.10 | 1.22 | 10.22 | 9.92 | 11.30 | 11.10 | 16.98 | 23.48 | 15.78 |
| 369... | | 0.20 | 0.16 | 0.36 | 2.36 | 11.08 | 20.34 | 14.64 | 19.04 | 22.04 | 9.70 |

TABLE III
Proposed Specifications for Non-Ferrous Foundry Sands
(Per Cent)

| Sieve | Fine | | Medium | | Heavy | | Core | |
|----------------|----------|----------|----------|----------|----------|----------|----------|----------|
| | Min-imum | Max-imum | Min-imum | Max-imum | Min-imum | Max-imum | Min-imum | Max-imum |
| 6 | .. | 2 | .. | 3 | .. | 3 | .. | 10 |
| 12 | .. | 2 | .. | 3 | .. | 3 | .. | 10 |
| 20 | .. | 2 | .. | 3 | .. | 3 | .. | 10 |
| 30 | .. | 2 | .. | 3 | .. | 3 | .. | 10 |
| 40 | .. | 2 | .. | 3 | .. | 3 | .. | 20 |
| 50 | .. | 2 | .. | 3 | .. | 5 | 20 | .. |
| 70 | .. | 5 | .. | 5 | .. | 10 | 20 | .. |
| 100 | .. | 10 | .. | 10 | 10 | .. | .. | 20 |
| 140 | .. | 20 | 15 | .. | 15 | .. | .. | 10 |
| 200 | 15 | .. | 15 | .. | 15 | .. | .. | 5 |
| 270 | 15 | .. | 15 | .. | .. | 10 | .. | 2 |
| Pan | .. | 40 | .. | 25 | .. | 10 | .. | 1 |
| Clay | 15 to | 20 | 10 to | 15 | 10 to | 15 | .. | 3 |
| Fineness | 180 to | 200 | 150 to | 180 | 120 to | 150 | 50 to | 80 |
| Permeability | 10 | .. | 15 | .. | 15 | .. | .. | .. |
| Grain Strength | 5 | .. | 5 | .. | 5 | .. | .. | .. |

Ferrous Metals

By SAM TOUR

Lucius Pitkin, Inc., New York

under a modified grade designation as arrived at by him. The results of these fineness tests on grade designations, as modified by Nevin, still show a wide variation in the essential grain size distribution of the various sands. How great the confusion really is can

only be shown by replotting the data reported by Nevin on the basis of the classifications used by the suppliers of the samples. This has been done only for two grades of sand, namely Albany No. 0 and Albany No. 1, which are in Figs. 1 and 2. The detailed figures

are also tabulated in Tables I and II.

Considering Albany No. 0, Fig. 1 and Table I, it is at once evident that sand represented by samples 211 and 259 are in no way comparable to sand represented by samples 251 and 203. Similarly, considering Albany No. 1

FIG. 2 — Different Albany No. 1 sands will often show such grain size distributions as are plotted here.

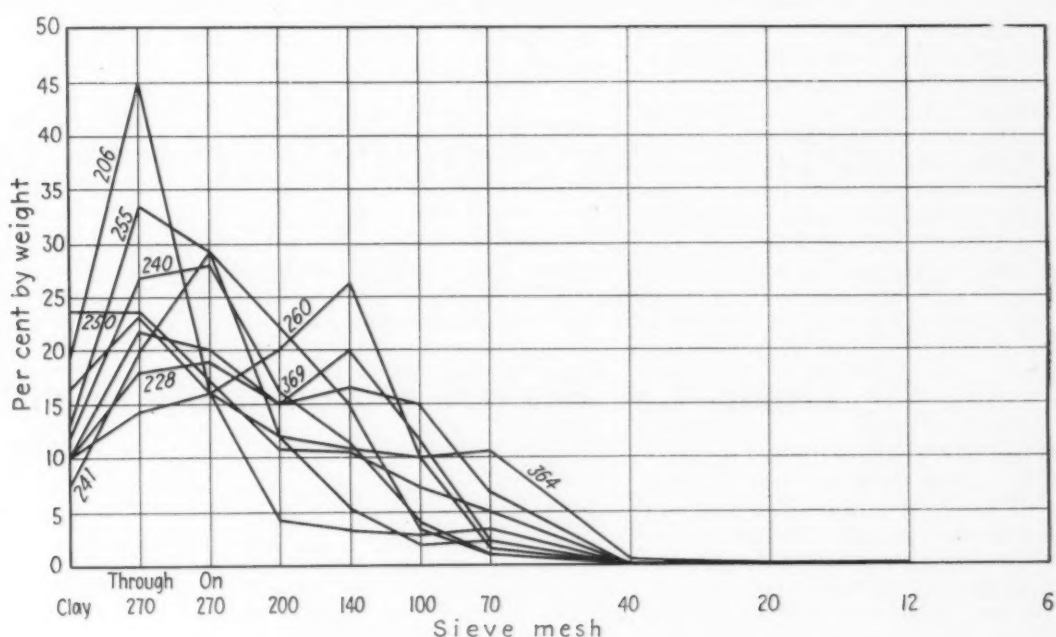
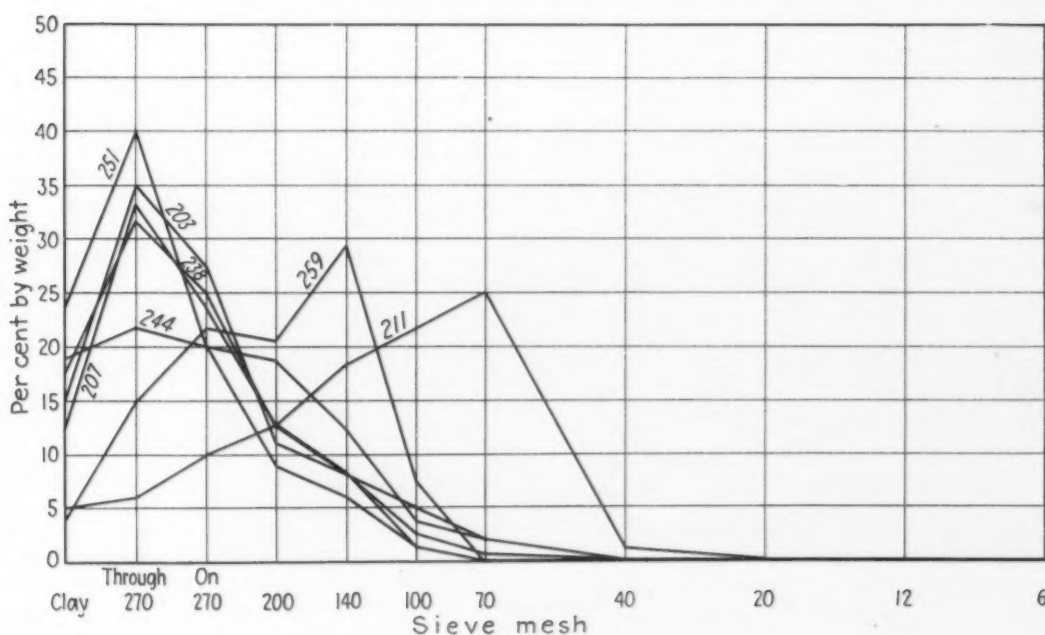


FIG. 1 — Wide grain size distribution of various Albany No. 0 sands. It is this variation which often results in casting difficulties.



sand, Fig. 2 and Table II, it becomes immediately evident that the fairly coarse sand represented by sample 364 is in no way comparable to the fine sand represented by sample 206. It is quite evident that something more is needed than the present method of classifying sands in terms of Albany grade designations, as are referred to in these two charts.

It has been amply demonstrated that a simple grain fineness designation showing the average grain fineness in accordance with the American Foundrymen's Association method is insufficient to properly designate foundry sands.

This is obvious when it is considered that the A.F.A. grain fineness number is purely an average number obtained from a general sieve analysis and may be arrived at by having a quantity of fine silt present to counterbalance a quantity of coarse particles. A combination of very coarse with very fine sand is obviously not suitable for a foundry sand. Another difficulty encountered by the non-ferrous foundrymen in making use of the A.F.A. classification as to grain fine-

ness is in the rather broad range covered by a given class designation of the A.F.A. A.F.A. class designation No. 1 covers the entire range of foundry sands with average fineness numbers of 140 up to 200, yet it is within this range that a majority of non-ferrous foundry sands should come. And, it is within this range that some differentiation should be made between sands for light weight fine finish castings as against sands for medium weight castings and sands for fairly heavy castings in the non-ferrous metals.

There is hardly any question, however, but that an A.F.A. sieve analysis or fineness test plus an A.F.A. clay content determination are the basic tests upon which foundry sands should be classified, designated and purchased. The important thing then that seems necessary is to set up various minimum and maximum values for the percentages of grain retained on various sieves in the carrying out of the standard sieve analysis.

Table III shows a proposed classification for three different grades of

molding sands for use in non-ferrous foundries and one grade of core sand for use in non-ferrous foundries. It is believed that these four sands will cover a majority of the work done in non-ferrous foundries in the United States in the copper-base alloys and in the aluminum-base alloys fields. It is not expected that these sands will be adequate for some of the special requirements in connection with very heavy or massive castings occasionally made, nor in connection with the high melting alloys of the nickel and Monel type. For want of better designations, the sands have been designated as "Fine," "Medium," "Heavy" and "Core." Letter designations have not been used in order to avoid confusion in connection with the letter designations adopted by the American Foundrymen's Association for clay content of molding sand. Number designations have not been used in order to avoid confusion with the number designations adopted by the American Foundrymen's Association in connection with the classification of sands according to grain fineness.

Dump Car Weight Reduced by Welding

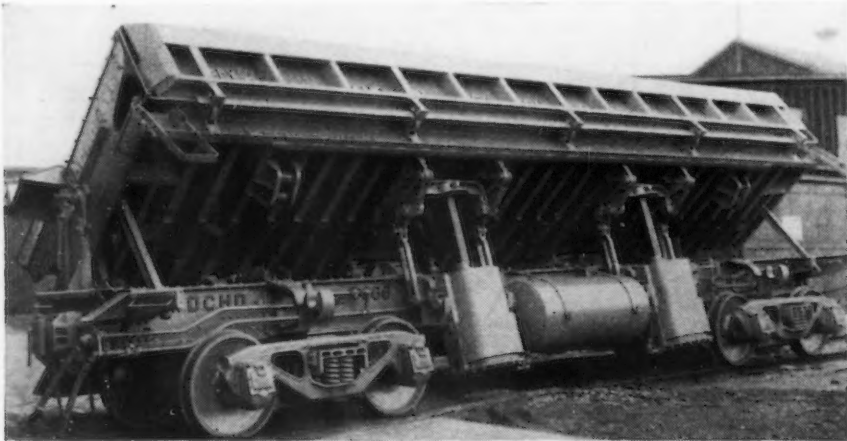
REDUCTION of weight by some 12,000 lb. as compared with a previous design has been accomplished by the Western-Austin Co., Aurora, Ill. in the 30-cu. yd. railroad dump car pictured in accompanying illustrations.

The actual weight of the old car is 69,000 lb., and that of the new is 57,000 lb. The rated capacity of the lightweight car is 100,000 lb.

From the accompanying table of general dimensions, it will be seen

TABLE I—DIMENSIONS OF DUMP CAR OF NEW AND OLD DESIGN

| | New | Old |
|--|---------------|---------------|
| Gage of track | 4 ft. 8½ in. | 4 ft. 8½ in. |
| Length of body, inside, at bottom | 29 ft. 9 in. | 33 ft. 4½ in. |
| Length of body, inside, at top | 31 ft. 0 in. | 34 ft. 6¾ in. |
| Width of body, inside, at top | 9 ft. 3 in. | 9 ft. 5¼ in. |
| Width of body, inside, at bottom | 9 ft. 0 in. | 8 ft. 4½ in. |
| Depth of body, inside | 2 ft. 11 in. | 2 ft. 8½ in. |
| Width of car, overall | 10 ft. 6 in. | 10 ft. 6 in. |
| Height, top of rails to top of body | 7 ft. 9 in. | 7 ft. 10 in. |
| Height, top of rails to center of couplers | 34½ in. | 34½ in. |
| Length, face to face of striking castings | 34 ft. 1½ in. | 39 ft. 0 in. |
| Length, knuckle to knuckle of couplers | 36 ft. 7½ in. | 41 ft. 6 in. |
| Length, center to center of trucks | 23 ft. 0 in. | 29 ft. 0 in. |
| Wheelbase | 5 ft. 6 in. | 5 ft. 6 in. |
| Angle of dump, from horizontal | 50 deg. | 50 deg. |



NEW type dump car of welded steel construction weighs 12,000 lb. less than previous design of equal capacity. The frame is constructed entirely of standard structural steel shapes and plates arc welded.

that the new car has the same capacity in an overall body length of 31 ft. as the car previously built, which was 34 ft. 6¾ in. long.

Arc welded steel is used throughout in constructing cars of the new design. The frame is built up of standard structural members of high-tensile steel, consisting of angles, channels and plates cut to size, assembled to fit the design, and fused together by electric arc welding. The pneumatic cylinder of the dumping mechanism is also of arc welded steel, superseding iron castings. The shielded arc welding process, with equip-

(CONTINUED ON PAGE 45)



14-INCH Gun,
Model 1910,
mounted on disap-
pearing carriage,
Model 1907. In
action.

(Photos Courtesy U. S.
Army Signal Corps.)

Industrial Plant Mobilization for the Next War—II

By COL. H. A. TOULMIN, Jr., D.S.M.

"SHADOW PLANTS" will acquaint our manufacturers, particularly in the metal working industry, with munition requirements in case of war. These plants in which small educational orders are financed by Government appropriations will emerge from shadow into definite realities in case of national conflict in which we shall be involved. These shadow plants are scattered throughout the length and breadth of our metal working

industry. In them, the educational orders financed by special Government appropriations will provide familiarity with war requirement and also the jigs, fixtures, tools and special facilities required in such production. This policy, inaugurated by our War Department represents what might be called the last word in non-militarist preparedness. The first article on this subject appeared in *The Iron Age*, July 21, page 26.

bucket. We will need at least six million of these automatic rifles to adequately equip our four field armies. The Springfield rifle alone has 93 parts and requires 103 dies, 463 jigs and fixtures, 506 special cutting tools, 1320 working gages and 1339 inspection gages.

No wonder the Government is beginning its educational orders through a bill of Congress for two million dollars to acquaint manufacturers with the art of making munitions through these "shadow plants." Production problems of munitions are relatively simple compared to the problems of gages, jigs, fixtures and tools. It is this neck of the bottle that the Government is trying to remedy in industrial mobilization by preparing for the more difficult specialized munitions production by getting the gages, jigs, fixtures and tools ready now and teaching factories how to produce the special educational orders. We are going to try to learn to walk before we try to learn to run. That idea of Colonel Johnson some day may

LET us look for a minute beyond the procurement districts into which each branch of the Army divides the country for administration of industrial mobilization, and see just what conditions must be met in producing modern ordnance. Take the case of the automatic rifle, which can deliver as much fire as five to

seven men can get out of an ordinary Springfield rifle of the World War type. This automatic weapon requires 2345 gages, 1766 fixtures, 1388 special tools, and 79 punches and dies for its 74 parts. Congress is appropriating \$1,800,000 for these rifles and \$6,000,000 to \$8,000,000 for machine tools. This is but a drop in the



OPERATING the .50 caliber anti-aircraft machine gun. March 18, 1938.

mean the difference between failure and success in this age when wars may start unexpectedly and run on for six months before they are even declared.

Munitions Contracts

We have even made a study of the form of contract each type of munitions, or facility purchased, will have. In some cases, we have a Negotiated Price Contract, by which the work will be bought at an agreed upon price. In other cases, we will have an Adjusted Compensation Contract, which is a modification of the old cost plus contract which caused so much profit, caused so much loss and created so much scandal in the World War days. We will have an Evaluated Fee Contract also by which the contractor will be paid a set fee for certain facilities. War time contracts either spelled vast fortunes or industrial ruin during the last war. Under the present setup, the purchase of supplies where prices are generally established in the commercial market will be effected through the Negotiated Price contract. Undoubtedly there will be reasonable regulations to prevent runaway prices not only for the protection of the Government, but for the protection of industry engaged in non-war work.

Then the adjusted compensation

contract will give the contractor his costs and a profit at a reasonable percentage on the capital invested, and anything over the contracted price he will share with the Government so that is every inducement to cut costs in order to make a greater profit, which was true of the old war time cost-plus contract. The evaluated fee contract will probably be used mainly for contract work as it will provide for paying facilities plus the cost of the construction.

A good deal of discussion has been going on about taking the profits out of war. You can no more get effective production in time of war without profits than you can get it in business in times of peace. The true answer is the prevention of excessive profits, while leaving the profit motive to function as normally as possible for the benefit of war time production. No nation ever succeeded in war that nationalized its munitions production. Our Government armories and arsenals could not produce a fraction of our war time requirements.

Industrial Coordination

It is industrial management and team work that will win the day. As the poem runs:

"It ain't the guns or armaments
Nor the tunes the bands can play,

But the close cooperation

That makes us win the day."

So you may expect some morning when we mobilize our industry for war time production to have laid down on your desk a contract that has already been negotiated in its terms with the Government, except the specific figures. Out in the plant you will have gained experience with the "pilot plant" and the educational orders so you will know how to correctly calculate your costs and other data in order to put the right figures in the contract.

You will dust off the plan for expanding the plant to take the bottle necks out of munitions production. You will put in that additional power line, and you will know where to house the added men and women to step up production.

You will be sure that your ordinary customers will be taken care of, reasonably well, because you will only have to turn over from twenty to fifty per cent of the productive capacity of your plant to munitions work.



The jigs, gages, fixtures and tools will already be available, ready to be put into production uses.

Anyone who lived through the last war and the industrial mobilization problems will realize how sharply all this contrasts with the hectic confusion of those memorable days.

Decentralization for War

Better yet, the Ordnance Department, the Quartermaster Department, the Air Corps, the Signal Corps, and other similar Bureaus have divided the United States into industrial districts with organizations in each district, which have been decentralized from Washington, so that they can work directly with the plants and the

district allocated to them. This close, friendly and understanding working relationship, thoroughly decentralized from a central control at Washington, makes industrial mobilization in our great country entirely practical. In each district is the district office, with a suitable military and civilian staff that has already made the survey of the facilities in your factory, has agreed with you upon the allocation of these facilities and has worked out exactly what you can do, how you can do it, and what more you need to see that it is done promptly and effectively.

These district offices are a good deal like the sales engineering offices of a large corporation. The relationship with your plant is about the same that you have with such sales engineering offices of those who sell to you. By putting the plan on such a well-known commercial basis, we will be organized for the complicated business of a mechanized war, based upon the art of fabricating and working metals.

The way to save the taxpayer's dol-



FIRST Army Maneuvers, Pine Camp, N. Y., August, 1935. Rapid fire with new automatic rifle.

lars is to make preparations like this to prevent wasting them. We are still paying for the horrible expense from the gross waste due to lack of organization during the World War. We only spend one and one-half cents per day, per capita, for our Army, Navy and Air Corps. This \$5.60 per year per person is very small compared to England's \$30, Japan's \$21,

France's \$18, Italy's \$15, Germany's \$11, and Russia's \$7. Our economy comes from careful planning, minute and detailed preparation, and a vigilant organization ready to mobilize industrially upon the first hint of danger. We can continue such an economic program if we will maintain, as we are now doing, an efficient organization, intelligent preparation and economic, timely industrial mobilization.

The cost in money and lives due to the neglect of these principles in the past has been stupendous. Every reader of this article is paying taxes for those past mistakes. The great cost of war is not in preparation for it, nor in the conduct of it, but in making up for the lack of preparation after we have once entered it, when we must pay for the mistakes that result from such a lack of foresight to prepare for the inevitable day. And the strange thing is that the greater the preparation we make to make war, the less likelihood that we will ever have to use it.



ABOVE
MARCH of the 1st Cavalry, Mechanized, from Ft. Knox, Ky., to Ft. Riley, Kansas.

o o o

AT RIGHT
SAN ANTONIO Division Tests held at San Antonio, Texas, Fall of 1937. Side view of 75 mm. Howitzer.



Progress in Industrial Building Design

AN unusual opportunity to observe progress made during the last few years in the design of industrial buildings is presented in the Hamilton plant, recently erected in East Hartford, Conn., by the United Aircraft Corp. The plant, which is for the manufacture of controllable-pitch propellers, adjoins two other United Aircraft factories, the Pratt & Whitney plant and the Chance Vought plant, both built in 1929. A compar-

ison of the new plant with the two earlier ones offers salient proof of the forward steps that have occurred in industrial architecture during the period of years that intervened between the times of construction. Such a comparison is especially significant since all three plants were designed by the same firm of architects and engineers, Albert Kahn, Inc., Detroit.

Both the Pratt & Whitney and the Chance Vought buildings were con-

sidered modern and effective buildings at the time they were built. In many respects they are still up-to-date. But in the Hamilton plant there are embodied many features which were unattainable in 1929 and which result in greatly improved efficiency.

For example, it is a well established fact that the floor of a factory building should be free from obstructions which tend to cramp production or which hamper the placing of ma-



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THE intensity of daylight in this plant is the same as the intensity in the Pratt & Whitney plant, but in the Hamilton plant the glass in the roof is so placed that the natural light of the building is uniformly distributed. The machines stand out with equal color values and shadows are practically eliminated.
○ ○ ○



ALTHOUGH the interior of the building is flooded with daylight penetrating through the glass in the roof monitors, nevertheless the light is not uniformly distributed, as is evidenced by the many shadows cast on the floor and on the machine tools.

o o o

clinery; and in view of the desirability of unimpeded floor area interior columns are usually spaced as far apart as possible, taking into consideration the nature of the product and the cost of building construction. With this consideration in mind, the interior columns in the Pratt & Whitney plant were spaced 32 ft. apart in one direction and 40 ft. in the other. The unobstructed floor area that resulted was 1280 sq. ft. per bay. These dimensions were considered large, at the time, and represented a marked improvement over previously constructed buildings.

However, in the Hamilton plant a new design for roof trusses permitted the spacing of interior columns 60 ft. apart in both directions, thus obtaining an unobstructed floor area in each bay of 4096 sq. ft., or an increase in area of approximately 225 per cent. A novel application of cantilever roof trusses effected this improvement without increasing construction cost. The trusses over alternate bays are continuous over the supporting columns, and carry suspended trusses over the intermediate bays. In this type of roof the weight of the structural steel, per sq. ft. of floor area, is no more for the 4096 sq. ft. bay than for the 1280 sq. ft. bay.

Projecting the roof trusses beyond the column supports to produce the cantilever effect achieved a further advantage. With the resulting increase in the width of the roof monitors, or the distance between the

monitor sash, the daylight which penetrates through the sash is more uniformly distributed than in the case of the earlier factories. And uniformity of lighting is as important as intensity. If a mechanic has to stand between the source of light and his work, he will cast a shadow on his work; or if the machine is so placed that its frame stands between the work and the source of light, production will be similarly impaired. And this is true no matter how bright the light itself may be.

The desired intensity of natural lighting in a building is always obtainable, because it is governed by the area of the glass in the monitors. In all three plants the area of the monitor sash equals 25 per cent of the floor area. But uniformity of lighting is governed by the proper location of the sash, and this factor depends upon design. Experiments conducted during the period between the erection of the Hamilton and the Pratt & Whitney plants demonstrated the advantages obtainable by increasing the width of the monitors. In the Hamilton plant the monitors are one-third wider than in the Pratt & Whitney.

The effectiveness of the monitor lighting in the Hamilton plant is clear-

ly shown in the accompanying interior views. For purposes of comparison an interior view of the Pratt & Whitney plant is shown above. In this case there is ample intensity of light, though it is not uniformly distributed. In spite of the bright interior, there are many pronounced shadows. Photograph on opposite page of the interior of the Hamilton plant, shows the light much more evenly distributed; shadows are practically eliminated and the various machine tools stand out with nearly equal color values. As a result of this uniform lighting there is no necessity for using local lighting on any of the machine tools in the Hamilton plant, even where the most intricate work is being performed.

Other improvements have been achieved in the Hamilton plant; such as improved artificial lighting, more effective heating and ventilating systems, more flexible means of power distribution, better wearing floor surfaces, and more conveniently located locker and toilet rooms. And it is interesting to note that these improvements did not increase construction costs.

Since the progress of industrial construction generally coincides with industrial developments themselves, the Hamilton propeller plant has particular interest. The many improvements in this plant have been necessitated by and are significant of the forward steps that have occurred during the past few years in the airplane industry.

TENSION is the bugbear of all belting drives. The efficiency of the drive depends primarily on the maintenance of proper belt tension, but all things seem to conspire to make that tension vary from instant to instant throughout the entire life of the drive. First, the starting load may be several times the normal running load due to the inertia which must be overcome to get any rotative shaft and its attendant mechanism in motion; then most industrial loads vary from moment to moment, from much less than to many times more than the normal running load. High speeds multiply the effect of centrifugal tension, and belts stretch in operation, destroying the initial values of the tension to which the drive has been adjusted.

It is not sufficient, therefore, to make sure that the initial tension is correct; means should be provided to insure correct tension during operation and throughout the life of the belt. In general, the three ways of doing this are:

1. To adjust the length of the belt to the drive.
2. To impose a weighted idler pulley on the belt.
3. To adjust the length of the drive to the belt, automatically.

The first method is somewhat of a "hit-or-miss" proposition, as one waits until the belt slips unduly during operation, then stops the drive and either shortens the belt, or, when possible, increases the pulley center distance by means of a shaft take-up mechanism. In either case, only part of the difficulty is met; that caused by the stretching of the belt. Nothing can be done about the variations in tension caused by variations in the load while operating. It is a costly method; wasting time and labor, stopping production while the adjustment is made, and between adjustments working with constantly decreasing efficiency. The second method has the advantage of being automatic, but has the disadvantage of consuming more power and of causing more rapid belt wear. The third method is completely automatic, and actually saves power and increases belt life. It is accomplished generally by means of the use of a pivoted motor base, and is therefore not universally applicable to all industrial drives, as will be shown in this discussion. Where the pivoted motor base can be used logically, it is an important factor of economy in the transmission system, and is therefore quite properly a subject for careful consideration.

The Economics of the

Chapter 33 of a Series on trial Power Transmission

To grasp the theory of the pivoted motor base, and to apply that theory to a particular drive problem, it will be necessary to glance briefly at the subject of belt tension in general. The usual approach is hedged about with a lot of terrifying mathematics, but it is possible to simplify that approach and still not depart unduly from strict scientific fact. Most practical belting men will agree with the following exposition.

Belt Tension Variation

In Fig. 1, driving pulley *A*, turning clockwise, causes driven pulley *B* to turn in a clockwise direction likewise by means of the travel of the belt which connects the two pulleys. When there is no load imposed on the driven pulley shaft, so that this pulley turns freely, the pull, or tension in the lower side of the belt (running from *B* towards *A*) may be taken as equal to the pull, or tension, in the upper side of the belt (running from *A* towards *B*). This is expressed by the engineer in the mathematical form

$$T_1 = T_2$$

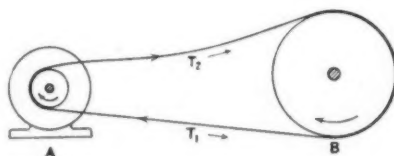


FIG. 1—Normal tensions in a belt operating under load.

T_1 (or T_2) is the initial tension in the belt, at rest or freely running at no load. This tension must be great enough to cause the belt to grip the pulleys over the respective arcs of contact sufficiently to keep the driven pulley turning when the load is applied to its shaft. At the moment of application of this load the tension in the tight or pulling side of the belt (T_1) will be more than the normal running load causes, if the full load is applied instantly. This is the case when there is no clutch on the driven pulley shaft and the driving pulley is directly connected to the motor shaft. A workable rule is to take this starting tension at 1.5 times the normal running tension for a compensator-started motor; or 2.5 times the normal running tension for an across-the-line started motor. The point to be understood here is that the initial tension (or tightness of the belt around the pulleys) must be sufficient to overcome slippage under load-starting conditions.

Whenever the driving pulley is pulling the driven pulley, through the tight side of the belt, the tension T_1 is

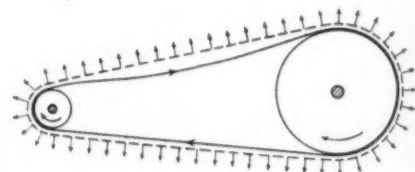


FIG. 2—Full line indicates belt running position under normal tension; dotted line indicates position due to influence of centrifugal tension.

Pivoted Motor Base

the Economics of Indus- Methods and Equipment.

BY FRANCIS JURASCHEK
Consulting Editor, *The Iron Age*

greater than the tension T_2 in the slack side of the belt; for then the only function of the slack side is to return from the driving to the driven pulley whereas the tight side transmits the full power of the drive. The tension T_2 always has a positive value because of the combined influences of the weight of the belt and the centrifugal force caused by the speed of the belt travel. The difference between the values of T_1 and T_2 at any moment is equal to the transmitted load multiplied by a factor which takes into account the belt speed in feet per minute, the diameter of the driving pulley in inches, and the number of revolutions of the driving pulley per minute. (For highly accurate results, the angle of arc of contact between belt and driving pulley and the coefficient of friction should be considered also.)

Simply, this factor may be taken as k , equivalent to 33,000/belt speed in ft. per min. Mathematically, the difference in belt tensions under normal operating conditions may be expressed as

$$T_1 - T_2 = kP$$

where P is the transmitted load in horsepower.

Practical considerations of belting operation have shown that the ratio T_1/T_2 between the tight and slack side tensions should lie between the range of 2.5 and 7; that is, the tight side tension should not be less than 2.5 times, nor more than 7 times the slack side tension. This ratio is in part dependent upon the angle of "wrap" or contact of the belt on the driving pulley: being low for small contact angles and high for large contact angles. A very low value of this ratio indicates a large amount of total tension in the belt, accompanied by good frictional grip of the belt on the pulleys, but with the danger, if carried too far, of shortened belt life and worn bearings. A very high value of the ratio indicates a small amount of total tension

in the belt, which, if carried too far, will result in excessive belt slippage, undue power losses, loss of production efficiency, and shortened belt life. It is always safest, whenever possible, to take a figure approximately midway between these extremes, say between 4 and 5, for the tension ratio. If we call this ratio of tensions between the tight and slack sides R , another mathematical expression is available which will be useful in application problems.

$$T_1/T_2 = R$$

Now, whenever the actual load transmitted is known, and the tension ratio can either be determined or assumed, we have from the foregoing equations a means of calculating the respective tight side and slack side tensions for any belt in actual operation:

$$T_2 = kP/(R - 1), \text{ and} \\ T_1 = RT_2$$

For starting loads or running overloads, P , or the load actually transmitted will be higher than during normal load operation, but the equations still hold provided the value of P is suitably increased. At high belt speeds the factor of centrifugal tension must also be considered, as this tension increases in value as the square of the speed. (That is, if the speed is doubled, centrifugal tension is quadrupled, or if the speed is tripled, centrifugal tension increases nine times.) The formula for calculating the centrifugal tension in pounds is

$$T = \frac{W \times S^2}{116,000}$$

where W is the weight of the belt in pounds per foot and S^2 is the square of the speed of the belt in ft. per min. If this value is low as compared to the value of T_1 it may be neglected, but if it is more than 10 per cent, it should be added. The practical effects of centrifugal tension are two; it tends to

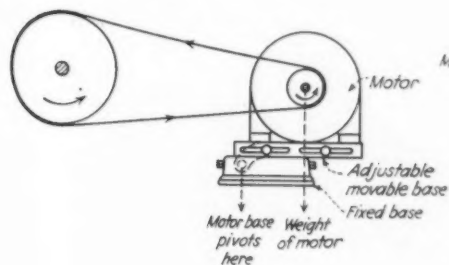


FIG. 3—Rockwood type pivoted motor base drive. Motor pivots below the plane of the motor feet.

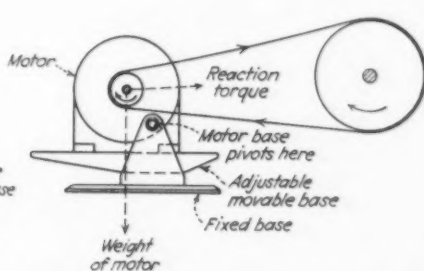


FIG. 4—American Pulley type pivoted motor base drive. Motor pivots above the plane of the motor feet.

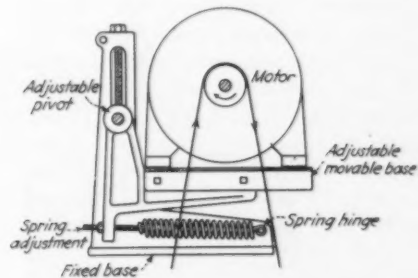


FIG. 5—Special Rockwood base adapted for vertical drives, with tension controlled by heavy coiled springs counteracting the motor weight.

pull the belt away from contact with the pulleys, and thus to cause slippage, and by pulling the belt outwards from the normal position all around the drive (see Fig. 2) it adds to the total tension. If, on heavy belting run at extremely high speed, the centrifugal tension should be equal to the total initial tension in the belt, the drive

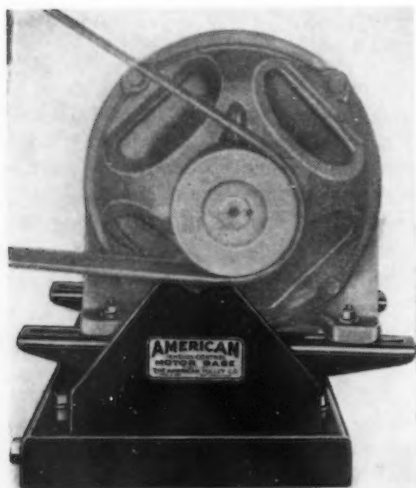


FIG. 6—American Pulley pivoted motor base, adapted equally for floor, wall or ceiling mounting, or with counter-weighted arms, for down drives.

would be impractical, since the belt would not grip the pulleys.

The Effects of Tension Variation

Since the efficiency of a belting drive depends upon the maintenance of uniform belt tension, it is clear that such tension maintenance is about the most important factor in belting drive operation. If the tension is too low, grip will fail and excessive slippage will occur. If the tension is too high, excessive belt wear will result, shaft bearings will run hot, and the belt will stretch, or break. Starting loads and overloads encountered in operation should not increase normal running tension beyond the elastic limit of the belt material, for when this happens the belt stretches, and all previous values of tension are altered. The belt must be taken up (or shaft center distances increased) to regain proper tension values. And, if the belt stretches continually, tension values must be kept abnormally high with the result not only that power is wasted, but that more stretch occurs, as well as excessive belt wear.

If good belting in use can be kept to a tension ratio R (or T_1/T_2) of between 4 and 5, with total tension well

within the normal elastic limits of the belt material, it has been found that the most economical results will be obtained. For heavy, steady-load, horizontal, long center distance drives, this is not a difficult thing to do, provided the belt is correctly proportioned and of excellent quality. But for a very large number of industrial drives other than these it is a difficult problem, unless some means is included in the drive to hold the tension ratio automatically, under the various conditions of variable loading, of short centers, and of high-inclination, or vertical drives.

One of the most popular and ef-

throw the weight of the motor, pivoted outside the lines of belt travel, into the loop formed as the belt passes around the driving pulley. The first type relies for its tension adjusting effect wholly on the weight of the motor; the second partly on the weight of the motor and partly on the reaction torque of the motor. The principal construction difference between the two is, that the first type mounts the motor on a rocking base pivoted below the plane of the motor feet, while the second mounts the motor on a rocking base pivoted above the plane of the motor feet. (See Figs. 3 and 4.)

The first form is typified in the

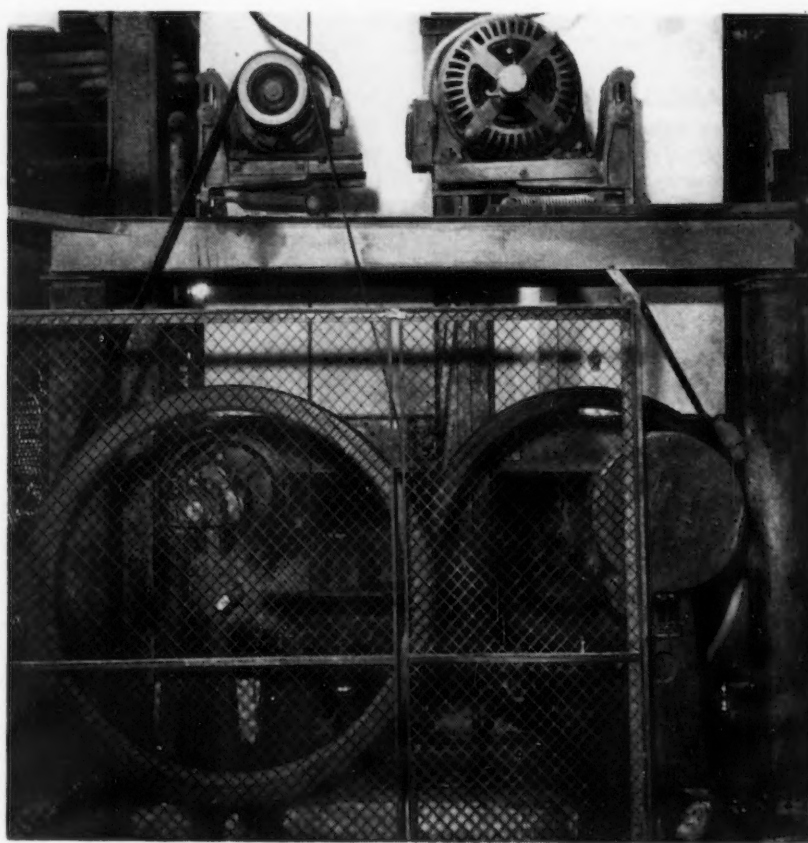


FIG. 7—Two 2700 lb. hydraulic pumps driven by a 15-hp. and a 20-hp. motor on 6 ft. centers from Rockwood vertical pivoted bases.

fective means of accomplishing this automatic tension adjustment is the pivoted motor base, which operates on the basic principle of synchronizing the load variation with counterbalancing tension adjustments by automatically altering the pulley center distance with a limited range.

The Pivoted Motor Base Drive

There are two generally recognized types of pivoted motor bases. Both

Rockwood base. The motor is secured adjustably to arms which curve downward to a pivot below the feet of the motor. The whole weight of the motor is thus utilized as a force, flexibly disposed, tending to maintain a uniform adjustment of the tension in the belt; free to lift when momentary overloads impose an added stress on the tension T_1 , or to drop when the tensions T_1 decreases. The position of the motor on the movable arms may

be altered to suit the conditions of the drive, so that a proper value of initial tension is obtained. Thereafter, the motor weight is depended upon to counterbalance variations in the load, or stretch in the belt.

The second form is typified in the American Pulley base. The motor is secured here in a cradle pivoted above the feet of the motor. The weight of the motor is utilized to secure the minimum required value of initial tension; thereafter the reaction torque of the motor is used as a force to counterbalance variations in the load stresses. This reaction torque is simply an application of a primary law of physics: To every action there is an equal and opposite reaction. When we push with our hand against a wall, the wall resists the push with an equal force. A rotor spinning clockwise in a motor frame produces an opposite rotational force in the stator. Normally, since the motor is fixed to the floor, this reaction is absorbed in the mounting. But if the motor were freely suspended in the air and the rotor continued to spin in a clockwise direction, the reaction torque produced in the stator would tend to turn the whole motor counter-clockwise around the point of suspension. In the reaction torque base this fact is taken advantage of by suspending the cradle on which the motor rests from a pivot above the motor feet, so that the motor will tend to push away from the line of the belt pull with a force equal to that pull. The greater the load on the belt the greater this reaction torque. Thus, when the whole drive is cor-

rectly designed and installed, the effect is one of securing maximum belt pull with minimum belt tensions, automatically.

How Does This Equipment Act?

The theory of the pivoted motor base is simple. The system permits the weight of the motor to be partly supported by the pivoted base and partly utilized as a means of applying minimum effective tensions to the belt by altering the pulley center distance as stresses increase or decrease. Fundamentally, therefore, the operating tension of the drive, instead of being a variable function of a fixed center distance between the two pulley shafts, is a uniform function of a variable center distance. This is the whole secret of the proposition.

The advantages of maintaining uniform tension are apparent from a consideration of the disadvantages of fluctuating tension. Too much tension, as has been said, causes excessive wear of the belt and the bearings, and tends to cause undue belt stretch. Too little tension reduces the power-transmitting capacity of the drive, promotes slippage, and restricts the output of the driven machine. Since load variation in the driving and driven machines cannot be overcome completely, and since load variation under fixed center distance conditions always produces tension variation, a system which automatically compensates for load variation in the drive (as well as for small amounts of belt stretch) will avoid the economic evils of tension variation and produce a smooth,

even flow of power as transmitted, so that maximum values of this power may be utilized at every instant of operation. As Staniar says, this system "synchronizes belt tension with belt load, absorbs centrifugal tension and stretch, and sustains its maximum efficiency at peak loads."

The pivoted motor base principle cannot be applied universally to all belting drives. Manifestly it is limited, first to such drives as employ a motor at the driving pulley end. Secondly, it is limited to those motor drives in which the weight of the motor itself is sufficient to furnish the necessary working tension. It is fortunate that motor weights are so proportioned to speed and horsepower as to make the use of the pivoted motor base practicable. A general reduction in the weight of electric motors by 50 per cent would put out of commission most of the successful pivoted motor drives now in use, says Robert R. Tatnall, who has made an extensive study of the subject.

This same investigator suggests three important points to be borne in mind when designing and applying pivoted motor drives:

1—Low belt speeds should be avoided, by proper specification of motor speeds and pulley diameters, in order to get away from the necessity of high tension ratios.

2—Extremely short center distances and high pulley ratios should be avoided, since small pulley contact angles produce low tension ratios.

3—Belts of "high capacity" should be used, since the belt tension demanded by the drive varies decidedly with the coefficient of friction.

Pivoted motor drives are, however, particularly suited for compressors, pumps, blowers, exhausters and equipment of like load types, for many machine tools, and for the driving of industrial head and line shafting. Centers as close as twice the diameter of the larger pulley are quite practical; in some cases even shorter center distances work successfully. Pulley ratios are feasible up to 8 to 1 (ordinarily, fixed center belting drives are not practical for ratios over 6 to 1); thus the use of high speed motors, costing less than low speed motors and yielding higher efficiencies, is made even more practical.

(The next chapter of this series will include a discussion on the problems of application of pivoted motor drives.)



FIG. 8—Large fan driven by a 100-hp. motor weighing 3,000 lb., cradled in an American Pulley pivoted base; center distance, 43.3 in.

Recent Advances in Spot, Arc and

SPEEDS of 10 to 20 spots per sec. on sheet steel with accurate positioning and no warping of the assembly are features of a new high production spot welding machine introduced by the *Roth Welding Engineering Co., Inc.*, 17146 Mt. Elliott Avenue, Detroit. *Federal Machine & Welder Co.*, Warren, Ohio, has been licensed to manufacture similar equipment under Roth patents.

With the Roth Ultraspeed welder, any number of electrodes from 10 to several hundred are put under pressure simultaneously, but only one elec-

By **FRANK J. OLIVER**
Associate Editor, The Iron Age

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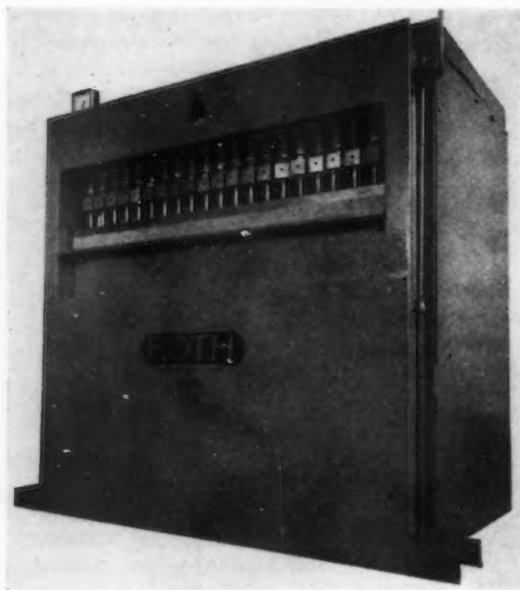
iar practice of making the electrodes contact separately in rapid succession. It is said to avoid metal "pick-up," and to increase electrode life through the absence of shock. Other advantages claimed for this type of welder are: clean welds of improved strength and uniformity and maintenance of shape and position of the work be-

cause the individual electrodes act as hold-down clamps.

Power Driven Spot Welder

SERIES G spot welders made by the *Thomson-Gibb Electric Welding Co.*, of Lynn, Mass., have been designed specifically for power drive. Pressure is supplied by a cam driven by a worm reduction unit and acting on the rocker arm into which the upper welding arm is clamped. Pressure can be regulated from about 200 to 800 lb. Heat control is by a five point regulator. Control of the current dwell is by a magnetic contactor, limit switch and an adjustable fan type cam operating in conjunction with the pressure cam. Drive is by a 1/2-hp. motor, and by means of three-step V-belt pulleys, from 42 to 127 spots per min. can be obtained.

The frame is made of a fabricated steel base with a cast iron head bolted



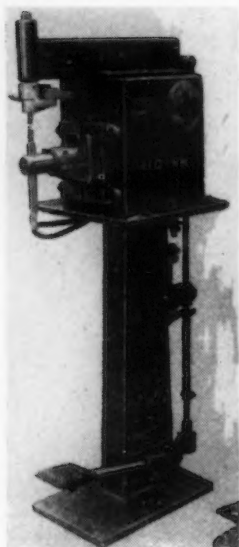
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SPEEDS five times faster than other spot welding methods are claimed for the Roth Ultraspeed spot welder. The model shown is one designed for welding a straight seam on flat sheets.

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trode welds at a time, keeping the transformer requirements low. Each electrode is spring supported and underneath each row or rows is a copper conductor resting on an I-beam table which is raised hydraulically to produce the pressure. The current distributing unit mounted behind the electrodes consists of a roller conductor on a horizontal screw spindle. The secondary circuit is established by the roller through its track. Control of the primary circuit is by a contact bar which has a make-and-break action on a notched distributor bar.

This design differs from the famil-

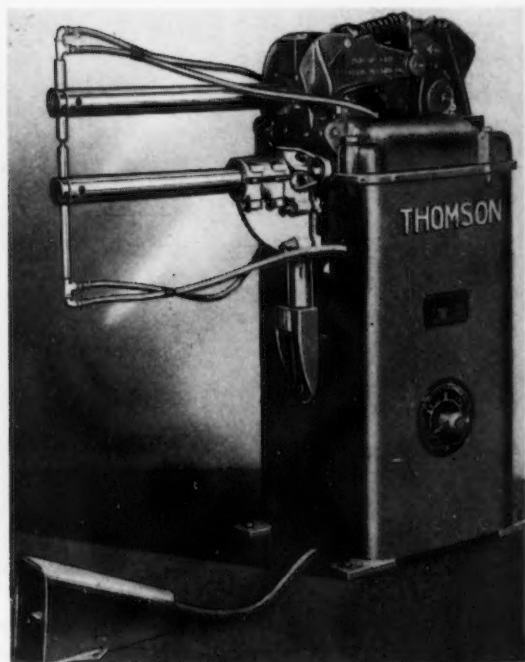


ABOVE

THE Eislser No. 210-VN is a 10-kva. spot welder with plunger action on the upper electrode.

BELOW

THE series G Thomson spot welder has been specifically designed for power operation of the upper electrode.

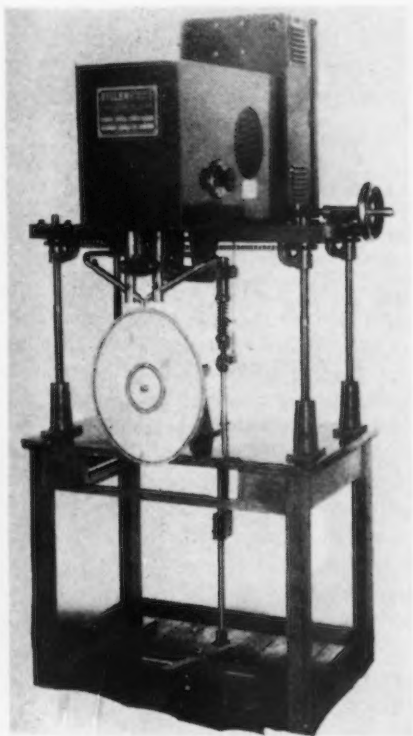


Gas Welding and Cutting Equipment

to it. Both arms are hard rolled copper, $2\frac{1}{2}$ in. in diameter. The lower arm has a drop of $5\frac{1}{2}$ or $14\frac{3}{4}$ in. by reversing the arm holder. It can be swung 30 deg. to either side. Throat depths of 12, 18 or 24 in. may be had and the transformer capacity can be 20, 30, 40, or 60 kva.

Plunger Type Welders

FOR precision spot welding on small parts, the *Eisler Engineering Co.*, 754 South 13th Street, Newark, N. J., has developed a line of vertical type welding machines in which the upper electrode is actuated by a plunger action. These machines are especially adaptable where studs and lugs are to be accurately welded to sheet metal without the drilling of holes. A standard single-phase transformer supplies the welding current. Sizes range from 1 to 35 kva., and six points of heat control are obtained. They can be had in foot, air or power operated models and in either bench or pedestal types.



FOUR new types of spot welders have recently been placed on the market, also standardized spot welding tips and welding timers. Improvements have been made in atomic-hydrogen arc welders and a company heretofore a producer of d.c. machines has brought out an a.c. transformer type. A large number of welding rods for special purposes have been announced in recent weeks. Gas cutting equipment is running to popular priced models of light weight for portability.

Standardized Welding Tip

A NEW type of spot-welding tip in a complete range of standard sizes has been introduced by *P. R. Mallory & Co.*, Indianapolis. In de-

veloping the design, welding tip nose forms, water hole depths and wall thickness were tested to determine the best proportions for maximum efficiency. As a result, the nose of the tip is sturdier and together with better uniformity in the metal makes for longer life. The length has also been proportioned to give more welds with proper cooling. Selection of a round bottomed water hole provides streamline cooling, with no corners to trap steam, and permits a proper hole depth without decreasing wall thickness or reducing the current carrying capacity in the section of the tip at the bottom of the hole.

The new tips may be had in Elkaloy and Mallory 3 metal. Water-cooled holders have also been standardized. All types and sizes are available from stock.

A.C. Arc Welders

A NEW atomic-hydrogen arc welding equipment, especially suitable for the fusion welding of



ABOVE

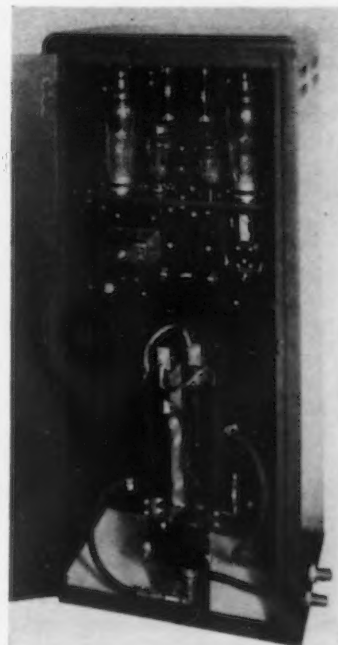
MALLORY tips for spot welders, gun welders and hydromatics have been standardized after much cooperative research with the users of resistance welding.

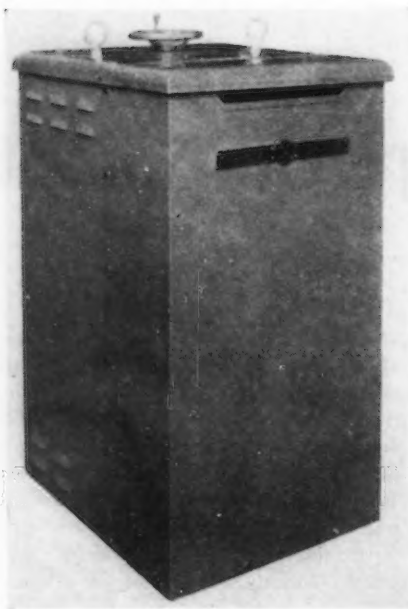
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MODEL No. 210-JMS, made by *Eisler Engineering Co.*, 754 South 13th Street, Newark, N. J., is designed for welding the binder on asbestos core gaskets. In this overhead spot welding unit, both electrodes contact the top of the work. Raising or lowering of the electrodes is provided by handwheel. This particular machine is rated at 10 kva. and is intended for welding stainless steel gasket binders.

AT RIGHT

WESTINGHOUSE type SP-11 ignitron spot welding timer mounts two sizes of tubes. On low duty cycles, the WL-652 tube will carry 1500 amp. at 220 to 550 volts, whereas the WL-651 will carry 2800 amp. at 440 and 550 volts or 4300 amp. at 220 volts. The current rating is reduced at higher duty cycles. These timers are adjustable to pass current for any exact number of cycles from 1 to 15. For longer times, the SP-11-A is adjustable from 1 to 30 cycles.





TYPE WHB atomic-hydrogen arc welder is an improved model made by General Electric in 35, 75 and 150-amp. capacities.

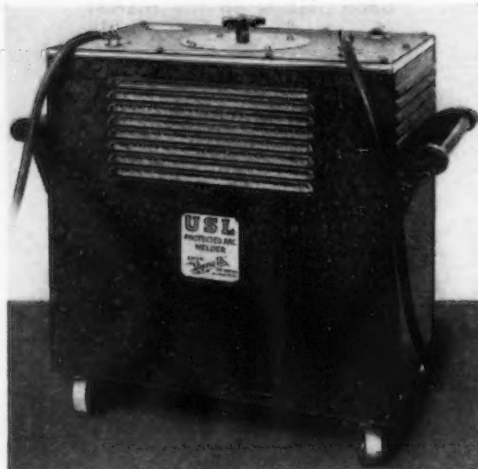
special alloys, like stainless steel, and thin sections of any metal difficult or impossible to weld by other methods, has been announced by *General Electric Co.* The unit is said to produce a uniformly strong weld, free from porosity and with an exceptionally smooth appearance.

In atomic-hydrogen arc welding, an a.c. arc is maintained between two adjustable tungsten electrodes, and hydrogen is fed to the arc. The hydrogen molecules when subjected to the intense heat of the arc are broken up into atoms, the majority of which recombine outside the arc zone, liberating heat far in excess of that obtainable from a gas flame or from an electric arc alone. The remaining atomic-hydrogen provides an extremely active reducing atmosphere which effectively prevents oxidation of the weld and protects and cools the tungsten electrodes, thereby minimizing electrode consumption. A suitable filler rod is fed into the weld as needed.

The new G-E equipment combines into a compact, portable unit, all the electric devices used with the process. Convenient terminals and pipe fittings allow ready connection to the electrode holder, power supply, and hydrogen source. A convenient handwheel on the top of the set controls a continuously variable reactor which gives stepless current adjustment. An ammeter indicates the amount of current being used. The drip-proof enclosure

protects the equipment and the operator. Ventilation is provided by louvers at the ends. Lifting eyes facilitate transportation by crane. Roller-bearing wheels can be added to make the unit even more easily portable.

For hand welding, the familiar rod-type electrode holder is furnished, together with a supply of tungsten electrodes. For automatic welding, equipment with either a single- or multiple-arc head can be supplied, together with the necessary control,



STOUT handles and large casters make portable this 190-lb. USL transformer type electric a.c. arc welder of 150-amp. rating.

means for holding the work, and traveling mechanism. The same power-control unit as that employed for hand welding is applicable to automatic installations.

THE *Owen-Dyneto Corp.*, of Syracuse, N. Y., which has made d.c. welding units for 22 years, is now offering an a.c. machine under the trade name, USL Protected Arc Welder. The machine which can be attached to any standard power line, is rated at 150 amp., and has a range of 30 to 280 amp. output, with 20 to 30 volts across the arc. Size of rod used ranges from 1/16 to 1/4 in.

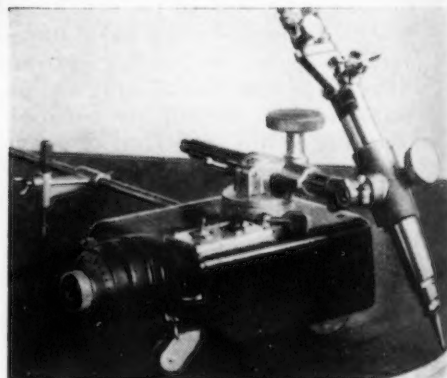
A steady arc is secured by means of a reactor on the secondary winding of the transformer that creates a power influx when the phase cycle passes the zero point. A single dial permits setting the machine to the requirements of the work at the beginning of the operation and no further attention is required. The transformer is constructed of silicon steel and the coils are flat wound copper. All connections use flat bus bars, and the trans-

former is entirely insulated from the welder box.

Arc Welding Electrodes

FLEETWELD No. 9 HT is the name of a new arc welding electrode made by the *Lincoln Electric Co.*, Cleveland, for welding pressure vessels of high tensile steel ranging from 70,000 to 80,000 lb. per sq. in. in strength. When stress relieved at 1200 deg. F., the deposited metal has a tensile strength of 70,000 to 76,000 lb., a yield point around 60,000 lb. and elongation of 27 to 32 per cent in 2 in. The material possesses good a.c. welding characteristics and gives good results on either plus or minus d.c. It is for welding in a down or flat position only. Other claims made for this product include low spatter loss, high deposition rate, easily removable slag formation, well shaped bead and weld deposits having minimum porosity.

THREE new arc welding electrodes, each protected by a heavy extruded coating, have been announced by *General Electric's* industrial de-



THE new Airco-DB No. 10 Radiagraph is a popular-priced gas cutting machine capable of making straight cuts or circles up to 85 in. diameter

partment. They are intended for shielded arc welding of mild steel. Type W-20E, for operation with a.c. or straight polarity d.c., is particularly suitable for high speed, single pass welding and for jobs where the set-up is likely to be poor. The flux coating is hard and not readily chipped or damaged by moisture. The rod can be used in any position.

Type W-22E is a fast melting, smooth flowing electrode that is said to form dense deposits without slag inclusions or gas deposits. Although vertical and overhead welding with this electrode is usually done with the 5/32-in. size or smaller, the 3/16-in.

size can be furnished with two types of coatings, one for overhead work, the other for horizontal welding. This rod is recommended for reverse polarity d.c.

Type W-23E is a high current or "hot" rod so that the weld metal is quite fluid and washes up well on the side walls of deep groove joints and fillets. Single or multiple-pass beads can be made at high speed without developing porosity. Ductility is excellent and its resistance to corrosion is said to be better than that of mild steel. A modification of this electrode is also available with a heavy taped coating for automatic welding. This is an a.c. or d.c. rod.

HI-TENSILE G is a mild steel electrode of the shielded arc type, made by the *Page Steel & Wire*

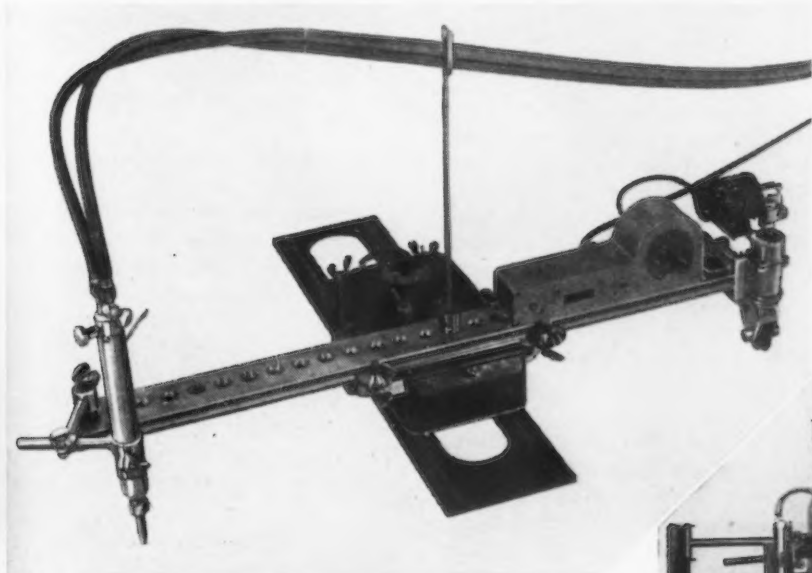
Division, American Chain & Cable Co., Inc., Monessen, Pa., and especially recommended by the makers for flat and positioned fillet and general flat welding. Tensile strength, elongation, density, fatigue and impact resistance are said to be equal to or better than solid rolled mild steel bars. These electrodes conform to A.W.S. specifications, grade 10. They have a uniform heavy flux coating and are suitable for either motor generator or transformer type welding machines.

A NUMBER of coated electrodes of special analysis have been introduced by the *Harnischfeger Corp., Milwaukee.* Smootharc Harstain, for example, is a rod designed for arc welding stainless steel. It contains 19 per cent chromium and 9 per cent nickel to prevent the deposited metal

from dropping below the usual 18-8 analysis of the parent metal. Carbon content of the wire is below 0.08 per cent to insure high resistance to corrosion. Columbium is added to prevent carbide precipitation, the cause of intergranular corrosion.

Smootharc Harchrome is designed for welding 4-6 per cent chrome steel and the rod deposits metal that has the same properties as the parent metal. In the electrode there is 0.50 per cent molybdenum, the purpose of which is to heighten its resistance to certain types of corrosion as well as increase its creep strength and resistance to impact.

Smootharc Har-Ten is another specialty designed to weld Man-Ten, Cor-Ten, High Steel, Republic Double Strength and Yaloy. The base metal of this electrode contains alloying elements which precipitate from solid solution at certain temperatures during heat treatment after welding, thereby increasing hardness and ultimate strength. Ultimate strength has been increased from 83,000 to 102,250 lb. per sq. in. by heating for 1 hr. at 950 deg. F. There are two types of Har-Ten. Type A is for flat, vertical



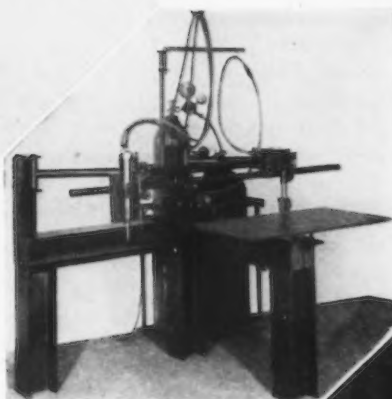
ABOVE

THE CIG automatic Gas-O-Graph, made by Compressed Industrial Gases, Inc., 221 North La Salle Street, Chicago, is a flame cutting machine for all types of shapes from plates and billets. Range is 30 in. width (54 in. by turning the plate) and unlimited length by adding sections of track. Irregular shapes can be cut from a tracing, pattern or template, full scale. Weight 100 lb. complete.

o o o

BELOW

THE Arco burning machine is said to cut square corners automatically while following a template.



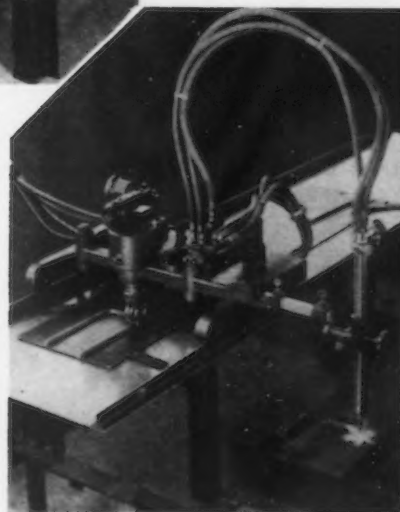
AT LEFT

WELED steel shapes are used in the construction of the Hayes torch machine, a pantograph type arranged with a tracing wheel to follow a drawing or template.

o o o

BELOW

ACCURATE cutting of similar shapes is possible with the template tracing attachment for the new Oxweld CM-15 portable shape cutting machine.



and overhead positions, whereas type B is for flat work only.

Gas Welding Rod

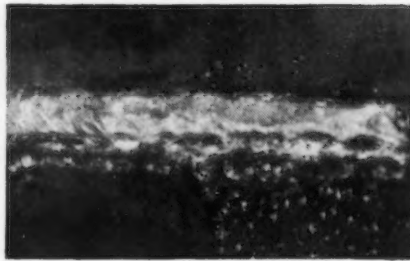
OXWELD No. 32 C.M.S. steel welding rod has been developed primarily for insuring uniformly high quality welds in high strength pipe and steel plate welded by the Linde-welde process. The maker, *Linde Air Products Co.*, indicates that the outstanding characteristic of the rod is its exceptional resistance to overheating in the molten state. Because of this the rod is particularly useful in multi-flame work. When applying this rod, the molten metal sets up more rapidly, making it easier to control the puddle on a curved or vertical surface. This rod develops an average tensile strength of 10,000 to 12,000 lb. per sq. in. greater than Oxweld No. 24 rod. Ductility is sufficient to meet any requirements.

Gas Cutting Machines

TO its line of gas cutting machines has been added the new light-weight Airco DB No. 10 Radiograph by the *Air Reduction Sales Co.*, 60 East 42nd Street, New York. It weighs only 41 lb., sells for \$125 f.o.b. any Airco district storeroom, will cut bevels up to 45 deg. and circles up to 85 in. diameter, using the radius rod and center point. Square edges and straight lines of any length desired may be produced. Cutting speed is from 4 to 60 in. per min., with indexed speed control for quick setting. Free wheeling is provided for easy lining up of the work, and there is simplified horizontal and vertical torch adjustment. All working parts are enclosed.

THE torch machine made by the *Hayes Track Appliance Co.*, Richmond, Ind., is a pantograph type with a tracing wheel to follow the contour of any template or the lines of any drawing. Frame is L-shaped, giving the needed stiffness, but leaving space for placing material to be cut immediately at the end of the tracing table. The pantograph assembly, which is carried by upward extensions of the frame, is made of heavy tubing.

Drive is by a small universal motor through stepped V-belt pulleys on a jackshaft from which power is transmitted by flexible shaft to a speed reducer at the top of the tracing wheel assembly. For circle cutting, an arm hinged at the middle of the table is attached to the side of this assembly and the tracing wheel is automatically

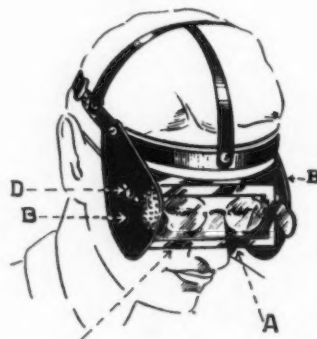


THE left-hand side of the steel specimen has been coated with G-E's Glyptal No. 1294 prior to welding, while the right has received no special treatment. Lincoln Electric Co. also has a compound, called Spatter Film, that prevents adherence of weld spatter.

guided by it. Torch is arranged to run at speeds from 5 to 24 in. per min.

CUTTING of square corners automatically while following a template is claimed for the burning machine made by *Arco Welding & Machine Works, Inc.*, 37 James Avenue, Jersey City, N. J. The template edge is gripped between two conical rollers, one of which is driven through a Dumore motor and double worm reducer. Micrometer adjustment of the journal block carrying the roller follower shafts is provided to take care of variations in track thickness and the width of the torch. The whole drive unit is rotatably mounted in ball thrust bearings so as readily to follow a sharp turn in the template.

MANY of the features of both portable and stationary cutting machines are combined in the Oxweld type CM-15 shape cutting machine, just announced by *Linde Air Products Co.*, unit of *Union Carbide & Carbon Corp.* Template tracing, hand tracing and automatic circle cutting can be performed. Maximum range of blowpipe movement is 60 in. lengthwise and 18 in. laterally. Circles from



LENS frame A swivels at D in the side protection members B in the Jackson eyeshields for protection against welding and cutting hazards.

2 to 18 in. diameter can be cut. Cutting speed can be varied from 3½ to 28 in. per min., and a speedometer indicates the selected speed. All controls are conveniently located. The blowpipe is universally mounted and can be swiveled for cutting bevels in either direction. In addition, a supplementary blowpipe bar permits the use of two torches simultaneously.

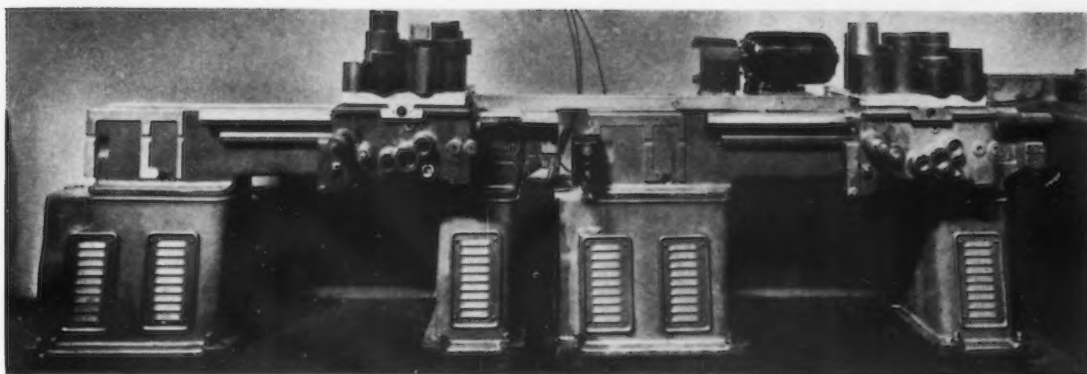
Prevents Spatter Adhering

GLYPTAL No. 1294 is a new material announced by *General Electric* for the prevention of the adhesion of weld spatter to metals. It is said not to harm any metal surface, including polished stainless steel, and will not produce carbon to make the weld hard or brittle, nor will it reduce ductility. Likewise, it will not give off smoke and will not form gas pockets or cause the weld to be porous. A thin coating will protect the surface and forms a priming coat for metals later to be painted. It also prevents rusting. Spraying is the preferable method for applying this preparation.

Spatter Film is a compound developed by the *Lincoln Electric Co.*, Cleveland, for the same purpose. It is soluble in water, non-inflammable and contains no free alkali to injure the hands or harm paint. It is applied by brush and a gallon of the liquid will cover about 50,000 sq. in. of surface. It can be removed for painting by wiping with a clean cloth, if wet, or by washing it off with water, if dry. This compound is supplied in quart, gallon, 5-gal. cans or 55-gal. drums.

Eye Shields

EYE protection for various types of welding is given in three new styles of eyeshields made by *Jackson Electrode Holder Co.*, of Detroit. The shields consist in general of a light headgear to which is attached an assembly of a lens frame and side protection members. One type, for blow torch work, gas cutting and general maintenance welding, has lens frame and side pieces of light, opaque material. Transparent, non-inflammable material is used for corresponding parts of another type for the use of men working on gun, spot and flash welding, pouring metal or on grinding operations. A third style, with the lens frame cut away sufficiently to allow vision under the lens, was designed particularly for the use of gas welders on automobile body work. Standard Federal Specification lenses are used, protected by cover glass.



Life of Lathe Bed Ways Lengthened By Flame Hardening

ONE of the accompanying illustrations shows the set-up of flame hardening equipment employed by the Monarch Machine Tool Co., Sidney, Ohio, for hardening the two flat ways and two vee-ways of the cast iron beds of Monarch lathes. After almost two years of development work, in cooperation with engineers of the Air Reduction Sales Co., this flame hardening procedure was perfected and is now in regular use.

The lathe bed is immersed in water up to the underside of the ways, as shown, to prevent distortion from the heat. Six Airco-DB flame hardening torches are employed, one to heat a flat way and two to heat each side of a vee-way simultaneously on each side of the bed. Quenching water jets follow immediately behind the oxy-acetylene flames, producing a hardening effect by chilling the hot cast iron.

Before being hardened, the ways are finish planed; after the hardening they are ground to a tolerance of 0.0005 in. on a new large surface grinder.

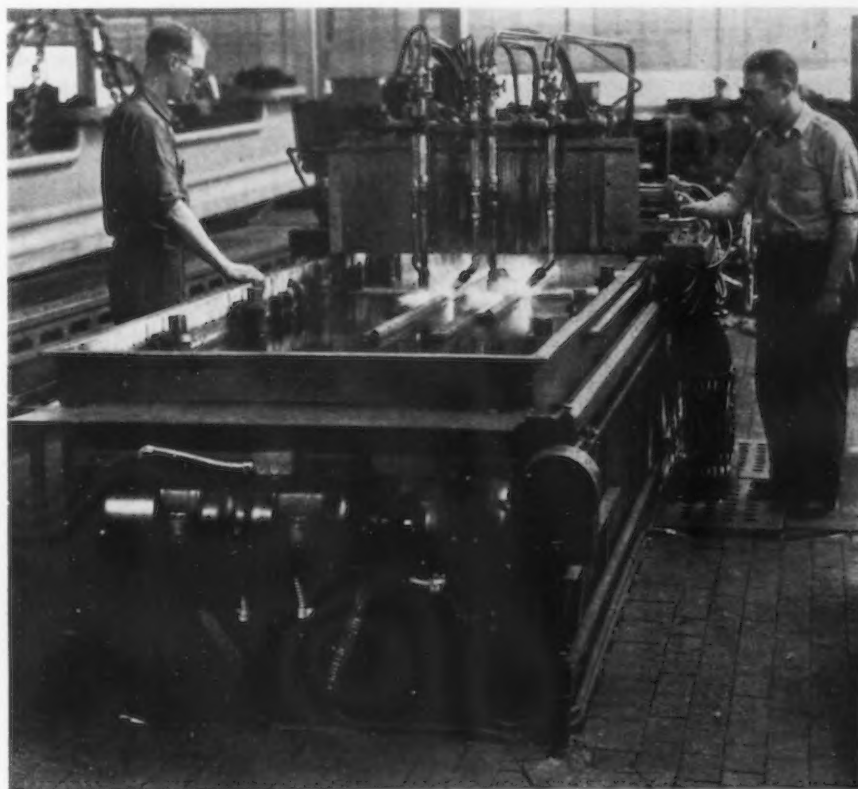
In the flame hardening, the entire way portions of the lathe beds are hardened to a minimum depth of $\frac{1}{8}$ in., and can be hardened to a depth of $\frac{1}{4}$ in. or more. The hardness obtained is usually between 70 and 80 Shore scleroscope, although in some cases it runs higher. The hardened and ground surfaces have the appearance of hardened steel. Grain structure of the hardened portion is greatly re-

fined and condensed and the metal directly under the hardened sections is dense and close grained.

Wear tests of both flame-hardened and ground and of unhardened way

surfaces have been in progress for some time on the set-up shown in the second illustration herewith. The carriage of each test lathe carries a load

(CONTINUED ON PAGE 45)



SIX-TORCH set-up employed by the Monarch Machine Tool Co., for simultaneously flame hardening the two flat and two vee-ways of its lathe beds. After 2,500,000 reciprocations of the carriage on the test set-up shown at the top of the page, the flame-hardened and ground bed ways showed no appreciable wear.

THIS WEEK ON THE

By W. F. SHERMAN

Detroit Editor

ASSEMBLY LINE

... Willys' \$26 price cut hints at general reduction in auto prices . . . Factory reconditioning of used cars by Ford is rumored as new program . . . Week's production declines from 42,010 to 32,070 passenger cars and trucks . . . Ford seeks to lower weight per horsepower in V-8 engine with 85 lb. reduction as goal.

DETROIT.—Even while retooling of the automobile plants for 1939 production is under way, there comes substantiation of predictions made weeks ago that automobile prices will be lowered. Taking the initiative, Willys-Overland Motors, Inc., made a surprise move last Thursday, announced price reductions as high as \$26 on some models. The new price on the Willys standard coupe is \$499, delivered in Toledo, plus Federal and State tax.

W. C. Cowling, vice-president, in his comment on the price announcement said quite definitely that it was linked to decreases in material costs. This price reduction is generally regarded as indication of similar reductions to be made by other manufacturers, probably when new models are announced.

Factory Reconditioning of Used Cars a Possibility

A half-confirmed rumor about Ford Motor Co. suggests that steps will be taken very soon to revamp the used car business entirely. There is evidence to substantiate the story that a Ford trade-in policy will be established which will give the customer a flat allowance on his old car, which then would be rebuilt at the factory and sold at a f.o.b. factory price just like a new car, with a new car guarantee.

For a long time Ford has had a trade-in policy on engines which made

it possible for the customer to have a reconditioned power plant put in his car at a stated price, but there has been no such policy in regard to complete cars.

It has frequently been suggested, however, that the used car market can only be kept in a healthy condition if the manufacturer steps in and regards it as his own problem, taking the used car out of the dealers' hands, reconditioning it and providing the buyer of limited means with low-priced transportation.

According to the story being told now, it is planned that dealers who take in cars not more than two or three years old will do so hereafter under factory supervision, with the trade-in figure established by the factory. The dealer then would turn the cars over to the Ford distributor agency which would send them to the factory where they would be torn apart and completely rebuilt. Sales would be handled very much as new car sales are.

Strength is lent to the tale by the fact that some shops which supplied Ford with parts in 1935 and 1936 are getting out their old dies and checking them over to determine their condition.

The plan has possibilities. It certainly would prove more beneficial to manufacturer, dealer and customer than the unorganized horse trading that is done in the used car business today to the detriment of all con-

cerned. With every car subjected to factory reconditioning, its exact condition at the time of trade-in would be relatively unimportant. A car in poor condition would have as much value as one in good condition (within a few dollars). Trade-in allowance would be uniform, so "shopping" for a good allowance would be eliminated.

Of course, dealers and distributors who are at great distances from Ford branch plants, where reconditioning undoubtedly would be done, would have the problem of shipping. But that doesn't look so bad either. Haul-away trucks and specially equipped freight cars which make deliveries from the factory to dealers' cities cover the return route empty. The cost of shipping the used car back to the plant should not be excessive, when this is kept in mind. The cost of shipping the reconditioned cars back to a potential market would be added to f.o.b. prices just as it is now added to new car prices. As long as an age limit is set on the cars so reconditioned, the set-up seems reasonable.

If it turns out that Ford actually is not going to do anything about such a plan, it still is something to keep in mind the next time the used car market is glutted as it was for many months during the last year.

Used Car Supply Diminishing

A recent survey of the used car market indicates that at present there is a shortage of used cars in key cities of the nation due to an enlarging demand from outlying rural communities. Buying is said to be so aggressive that a marked acceleration in prices has occurred. Ward's Automotive Reports, in an analysis of next year's potential market, declares that should this situation continue until the new 1939 cars find their way into dealers' hands, there should be a strong new car demand that might precipitate a car shortage. This condition actually is potent enough to account



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for the continued production which last week was at a level of 32,070 passenger cars and trucks, according to Ward's. The total in the previous seven-day period was 42,010 for the United States and Canada. In the corresponding week last year, output was 88,055.

Largely as a result of the favorable conditions in the used car market and in new car sales, the weeks of low production in the automobile industry are likely to be fewer than anticipated. Ford is continuing his volume at a substantial figure, the output last week having been 12,810, slightly above the previous week's production of 12,500. The improvement was due to the re-opening of the Lincoln plant.

General Motors volume of 13,415 units in the last week is attributable largely to the fact that Chevrolet is still in production.

Chrysler's total of 2750 against 6190 in the previous week marked the final clean-up of current models for that group of plants.

Among the shutdowns which were noted in the last week were Plymouth, which closed finally on July 19, and the Dodge spring and forge plant, both of which will reopen Aug. 1.

Pontiac, which closed July 15, is following a program typical in the General Motors setup. The foundry is already showing signs of life. (The Malleable Iron Division of General Motors in Saginaw resumed operations a week ago last Monday after being closed since June 24. About 1800 employees were recalled to work.) At Pontiac, machining of parts will be resumed Aug. 15. Car assemblies will start Sept. 1. This is pretty fast work on the part of the manufacturing divisions when it is realized that the first hand-built production models which met production specifications were not scheduled to be completed until the middle of this week.

Tire Production Resumed

Full resumption of production at the U. S. Rubber Co. plant on East Jefferson Avenue signals the begin-

ning of the tire company's 1939 program. It has been closed 90 days but now starts the production of 30,000 tires a day. It is understood also that the U. S. Rubber Co. has been awarded a contract for the production of tires sold by Standard Oil Co. service stations. The Ford tire plant, which is producing 6000 tires a day, shortly will be stepped up to a rate of 18,000 and it is also expected to go into volume production on inner tubes.

Apparently purchasing departments throughout the automobile industry are pretty well convinced that they can get delivery of steel on a 10-day basis. The prevalent belief is responsible for the fact that no sizable ton-nages for 1939 models have been ordered yet. Apparently inquiries will not materialize until some time near the middle of August in most cases. At Ford's Rouge plant, buying is considered unlikely before Aug. 15, but at that time Ford is expected to lay plans for procuring steel to produce 110,000 cars as the initial 1939 lot.

While some parts vendors have received orders in the past few weeks, the crest of the wave arrived this week with numerous commitments made particularly by General Motors divisions. For the most part last year's suppliers have received renewed contracts. No immediate changes attributable to recent changes in steel prices or basing points have been noticed.

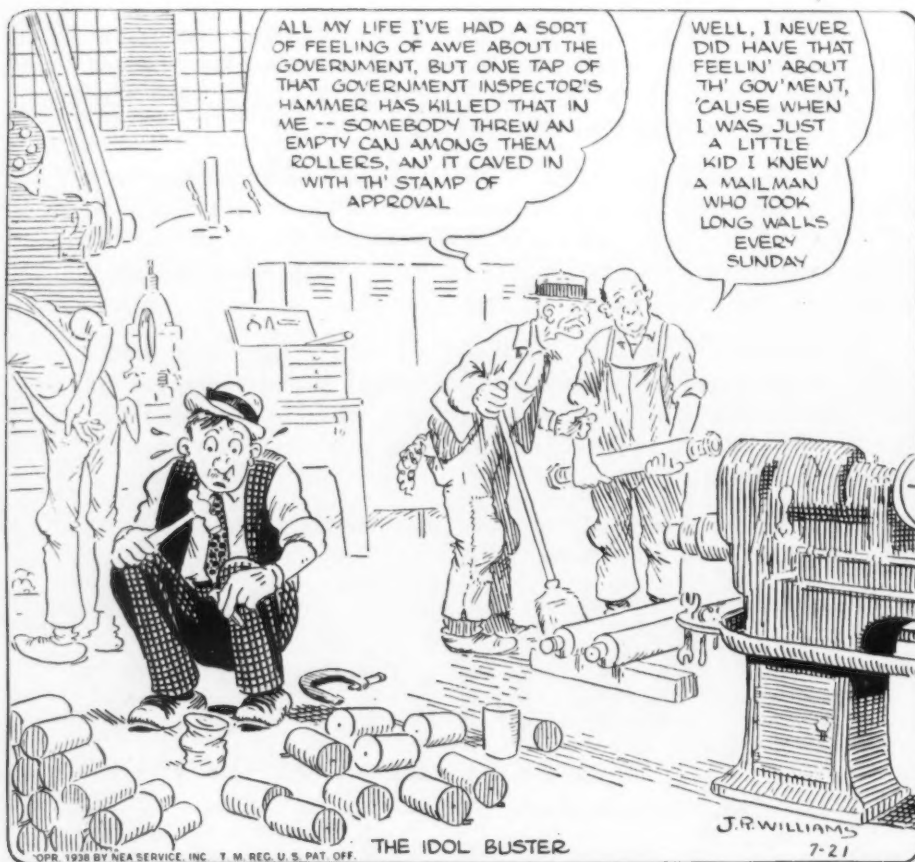
The first week of August should see numerous commitments for steel by these parts supplying companies. At the same time the dam should break and release the first of the automotive steel buys.

One of the most interesting programs in recent years in the automobile industry has been launched by Ford with the intention of reducing the weight of the V-8 engine by 85 lb. This represents an attempt to take between 10 and 15 per cent of the weight away from the power plant without affecting performance or durability. Among the changes already tried is weight reduction of the engine manifold. Something like three pounds is said to have been eliminated already by the experimental department.

One of the features of the 1939 Ford models, it is already known, is a combination distributor and coil which will be much lighter than the weight of the separate units commonly used. The combined distributor and coil unit will be manufactured by the Holley Carburetor Co., but is said to be a development produced by the Mallory Electric Corp., which produces many Ford ignition parts.

THE BULL OF THE WOODS

BY J. R. WILLIAMS



Spang Chalfant Opens New Pipe Mill

THE method of making butt-welded pipe by running a hot, continuous strip of skelp through a pipe welding mill, known as the Fretz-Moon process, has been in use in the United States, Germany and England for a number of years. The conventional equipment used in the process was elaborated considerably early this year when a new furnace for heating skelp was installed in the Etna plant of the Spang Chalfant division of the National Supply Co. The furnace, which was designed and constructed by the Salem Engineering Co., Salem, Ohio, although somewhat similar to other furnaces in operation here and abroad, is noteworthy because a number of improve-

ments in design and construction have been incorporated.

After passing through the preheating chamber of the furnace, which is heated by flue gases, the strip enters the furnace proper. In this latter section, heat is applied to the strip by 274 small burners, firing through both side walls of the furnace in such a manner that the flame impinges on the edges of the skelp. The heating chamber of the furnace is approximately 116 ft. long and is in reality a solid sheet of flame. As the strip moves forward the edges are heated to such a temperature that they begin to melt, and while in this plastic condition they are pressed together and a butt-welded pipe results.

The skid supports for the skelp in the heating chamber consist of a number of water-cooled pipes, extending between the two walls and bent in such a shape that the skelp tends to keep to the center of the furnace.

Fuel for the furnace burners is natural gas of approximately 1100 B.t.u.'s per cu. ft. thermal rating. The high flame temperatures and rapid combustion are developed by the use of metallic recuperators which pre-heat the combustion air to approximately 900 deg F.

Temperature at the discharge end of the furnace runs to approximately 2850 deg. F., under steady production conditions. The temperature is recorded at this point by means of a

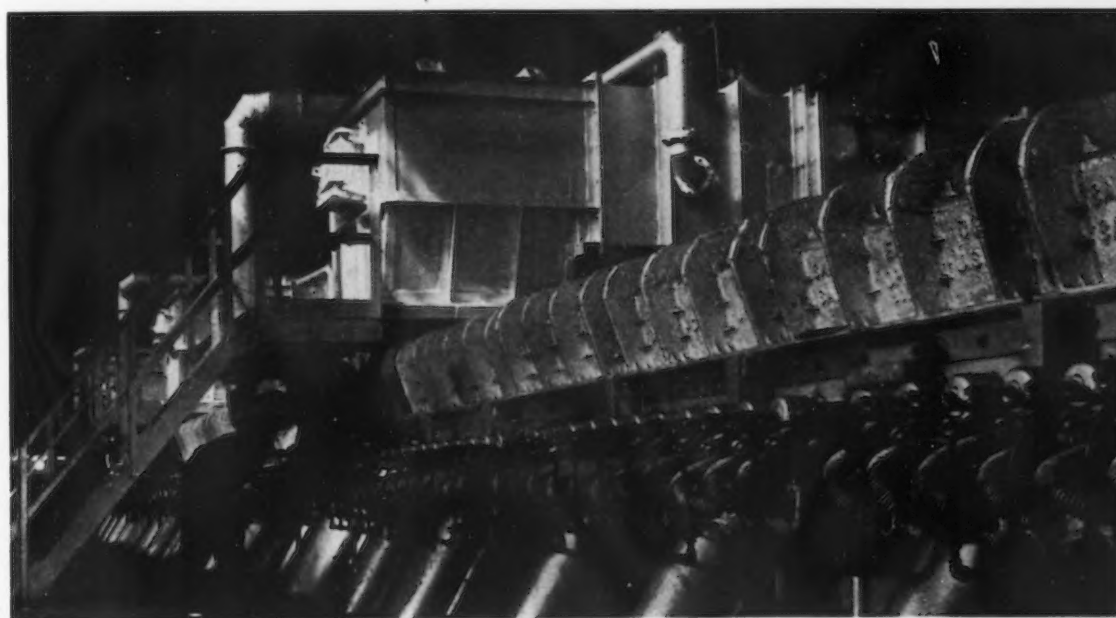


FIG. 1—Close-up of burners spaced along the side of the heating chamber of the furnace.

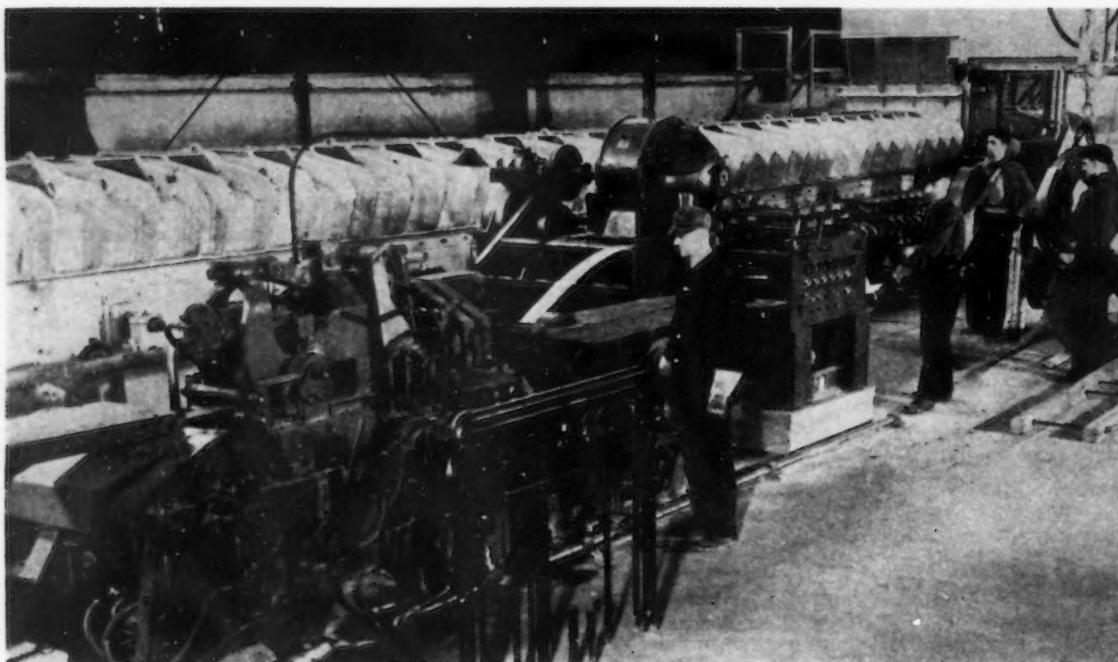


FIG. 2—Skelp is fed through a leveler and into the welding machine to join coil ends.

Rayotube type pyrometer, with a recording instrument mounted on the panel board.

As the skelp is dragged through the hot furnace, considerable scale is formed. Most of it, however, is caused by an air blast at the welding mill and, therefore, is deposited out-

side of the furnace. Most of the scale formed within the furnace proper is deposited near the discharge end, and the furnace bottom is especially designed so that this slag will accumulate at points where it may be conveniently removed through pockets.

The roof of the furnace is made in

sections, each section consisting of a cast steel bung, lined with high quality brick. These bungs are instantly removable in order to provide free access to the furnace for maintenance purposes.

The burners on the furnace are grouped into three zones, each zone

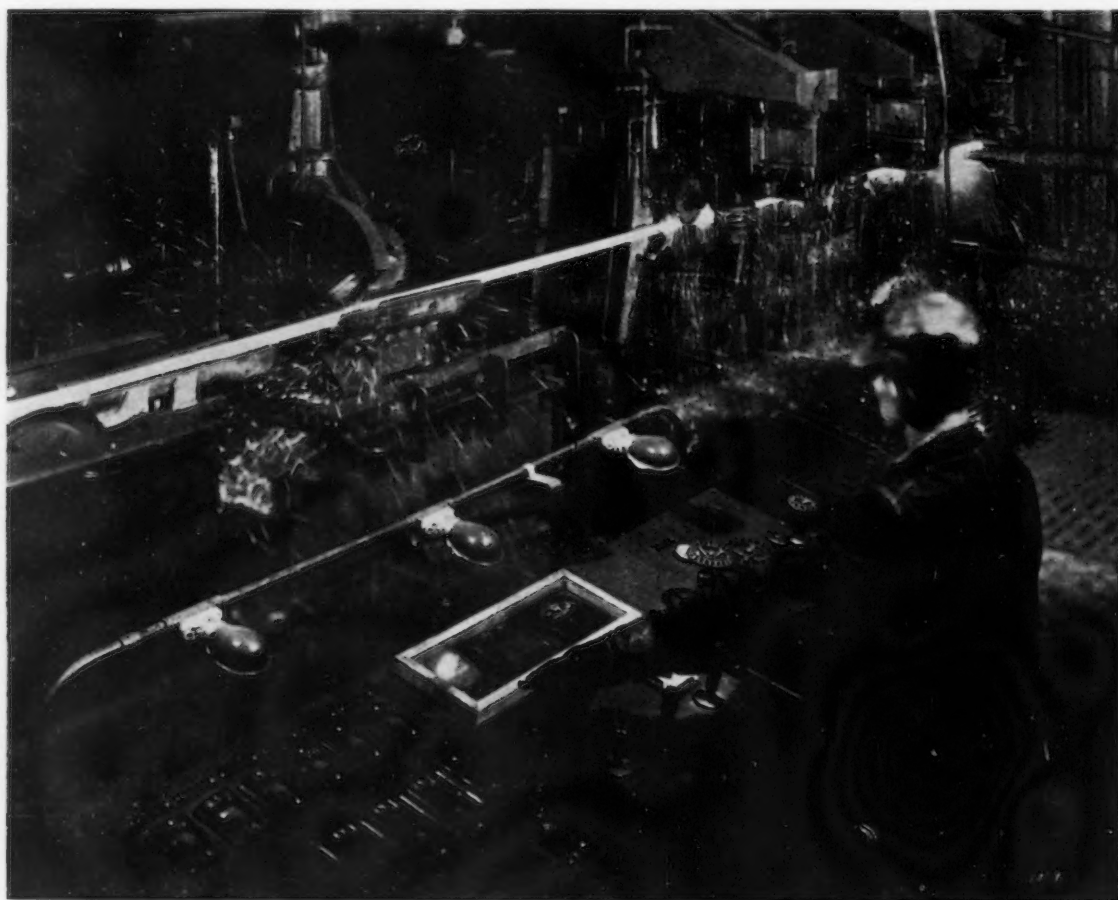


FIG. 3—The hot skelp leaves the furnace, passes through the welding head and is hot sawed to length.

being fully equipped with Askania mechanism for controlling gas-air ratios.

The recuperators are equipped with air dilution equipment for tempering the products of combustion entering the recuperators. The purpose of this dilution equipment is to keep the temperature of the gases at approximately a constant value (1850 deg. F.) and to prevent them from exceeding a point that would be injurious to the metallic elements.

A Spencer type blower supplies the necessary cold dilution air to each recuperator. The flow of air is controlled by means of a North American proportioning type valve operating in

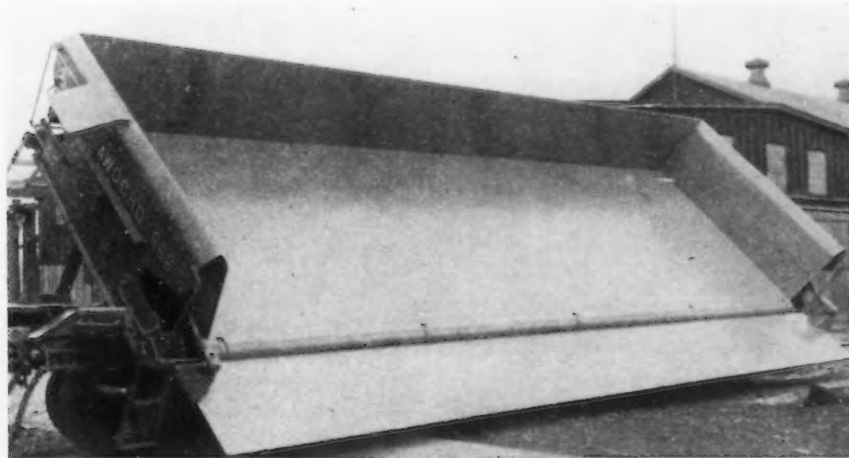
conjunction with a Leeds and Northrup drive mechanism and indicating controlling pyrometer and thermocouple.

The air pressure is reduced after leaving the combustion air blower to approximately 6 oz. at the burners. The gas pressure is maintained at a slightly lower pressure. The burners are of the nozzle mixing type, and are equipped with special spiral type refractory nozzles in order to thoroughly mix the gas and air so that it will burn rapidly and will reach its maximum temperature at the edge of the strip. In view of the fact that the furnace chamber is only about 15 in.

wide at the point where the strip passes through the furnace, the rate of combustion must be very rapid.

All flue tunnels and piping tunnels are under the floor level. The piping trenches are covered with floor plating, thus providing easy access to both sides of the furnace.

The furnace and pipe making mill regularly produce pipe up to 3 in. in diameter. The average range is from ½-in. pipe to 3-in. pipe and the maximum speed of skelp traveling through the furnace is 300 ft. per min. This high speed applies only to the small size pipe. The furnace regularly heats 13 to 15 tons of 3-in. pipe skelp per hr.



THE remarkably smooth floor of the new dump car facilitates dumping and minimizes wear and corrosion.

Dump Car Weight Reduced by Welding

(CONTINUED FROM PAGE 24)

ment supplied by the Lincoln Electric Co., is used.

This particular type of car is used around steel mills for handling slag, refuse and other materials and is employed by railroads in construction and maintenance. It is used also in quarries and open pit mines for hauling overburden, ore and stone and in various industries handling raw materials and disposing of refuse. The reduced weight of the car will be reflected in greater flexibility and reduced operating cost. A six-car train of the new cars actually weighs less than a train of five cars of the previous type, and can handle more payload with the same motive power.

Life of Lathe Bed Lengthened

(CONTINUED FROM PAGE 39)

of 500 lb. and a motor-driven crank arrangement moves each carriage 1 ft. of travel on each lathe bed. Abrasive material and cast iron chips and dust are applied at frequent intervals to make wear conditions severe. After more than two and one-half million reciprocations of the lathe carriages, the flame-hardened bed ways showed no galling but only highly polished surfaces. The actual wear was not measurable for carriage movements in number greater than would actually occur in 20 years of actual shop use.

The surface of the unhardened ways were badly galled and have been worn 0.002 in. The carriage of the

flame-hardened bed was in good condition and the bearing surfaces wore evenly, whereas the carriage of the unhardened bed was galled.

American Price Cuts Reported by Cartel

LONDON (By Mail).—Before its next meeting, scheduled for September in London, the International Steel Cartel will make efforts to secure the cooperation of a number of American exporters who have hitherto remained independent. In spite of the adherence of about 80 per cent of the American exporters in the price maintenance arrangements of the Cartel, the competition from the United States has lately been active. Any move which would eliminate this price-cutting on the part of the American "independents" would greatly strengthen the influence of the Cartel in dealing with breaches of price agreements by European concerns. Recently there have been complaints of price-cutting by American exporters in Scandinavian countries.

Sheet Data Booklet Is Offered to Trade

THE Association of American Steel Manufacturers has just issued Manufacturers' Standard Practice, standard permissible variations in gage weight, gage thickness, size, camber and flatness of sheets. Copies may be obtained at 616 Investment Building, Pittsburgh.

THIS WEEK IN WASHINGTON

... Nation given distorted view of Republic Steel's labor policy, R. J. Wysor tells LaFollette Committee ... Girdler to be a witness ... Test expected of Labor Board's attempt to "disbar" Weirton Steel's chief counsel.

By L. W. MOFFETT

Resident Washington Editor
The Iron Age

WASHINGTON.—In a statement read before the LaFollette Senate Civil Liberties Committee, which is "probing" the "little steel strike," President R. J. Wysor of Republic Steel Corp., the first company to be placed on the grill, charged that "certain isolated labor disputes and incidents have been emphasized to such an extent that a distorted impression of the labor policies of Republic Steel Corp. has been created." For this reason, Mr. Wysor outlined Republic's policies and its relations with its employees.

"We are convinced that industrial peace will be brought about only as a result of genuine collective bargaining in which the men may freely choose their own representatives without coercion or intimidation from any source," said Mr. Wysor.

"We have dealt, and will continue to deal, with labor union representatives of our employees. For years we had a signed contract with the Amalgamated Association of Iron, Steel and Tin Workers and this was discontinued only when, in 1934, that union made statements to the effect that it considered a strike call took precedence over a contract.

Plan Cost \$2 a Man

"For years, also, we had a satisfactory collective bargaining arrangement with our employees. Some 1500 cases were handled annually and approximately 75 per cent of them were decided in favor of employees. Our

employees had collective bargaining without payment of dues.

"The company stood the expense and in four years, as, has been testified here, the plan cost the company approximately \$392,000, equivalent to about \$2 per year, per employee. This expenditure included amounts paid to management representatives and amounts paid to employee representatives for time spent at meetings.

"But to my mind, the form of collective bargaining is not so important as the substance. True collective bargaining cannot be legislated into existence. It is a human relationship between employer and employee. To be genuine, it must be based upon mutual good-will and understanding.

"It is only by true collective bargaining that this country can solve its most pressing problem—that of achieving industrial peace. When the country once realizes the great difference between collective bargaining for the mutual benefit of employer and employee and collective bargaining for the purpose of regimenting employees and driving them into unions, it will wake up to the position in which we now find ourselves.

Finds NLRB Record Bad

"The proof of my statement that real collective bargaining cannot be brought about alone by law is found in the unprecedented wave of strikes, seizure of plants and the breakdown of law enforcement that has come about under the reign of the Wagner Act and of the National Labor Relations Board.

"It is my opinion that one of the great needs of this day is for the adoption of amendments to the Wagner Act which will make it a fair law both to employee and to employer. And when that is done, the basis for industrial peace will be established," Mr. Wysor said.

In order that both sides of the case may be heard, request has been made of the committee by General Counsel T. F. Patton of Republic to call Republic employees who are not affiliated with the CIO. The assumption is that, despite the strong CIO bias of LaFollette, who dominates the committee and often is its only member at the hearing, he will comply with the request as a gesture of fairness, if nothing more. But it has not been indicated when such witnesses may be called. At present the procedure appears to be calculated with a view to building up a great volume of evidence against the company to be used in examination of Tom M. Girdler, Republic Chairman, as a climax to the case. Mr. Girdler is expected to be called before the committee soon.

Newspaperman Denies Pressure

LaFollette and CIO officials have made much capital out of evidence which, they allege, shows that Republic has attempted to influence newspapers as related to labor problems. However, the committee received a disclaimer of knowledge of such an effort in a telegram from Charles M. Feidelson, Atlanta, Ga., NLRB director, former editorial writer of the Birmingham, Ala., *Age-Herald*, who, it was charged, the company had attempted to influence. Stating that he had ceased his editorship on Jan. 5, 1935, Mr. Feidelson wired that "so far as I know no one has sought to 'christianize' me through the use of the right influence as Kenneth D. Mann suggests." Mr. Feidelson added that "if any pressure was applied to me it was not felt." Mr. Mann is vice-president of the Truscon Steel Co., Republic affiliate.

The committee had previously introduced letters marked "personal and confidential" to support contentions that Republic had attempted to bring "pressure" on Birmingham papers to reflect the "correct" view on labor problems and on Republic's competition with the Tennessee Coal, Iron & Railroad Co., United States Steel Corp. subsidiary.

Bowerfind's Memorandum

In the correspondence were references to "cultivation" of Victor H.

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Hanson, publisher of The Birmingham *Age-Herald* and The Birmingham *News* and James Mills, editor of The Birmingham *Post*, a Scripps-Howard paper. Edward S. Bowerfind, representing the public relations firm of Hill & Knowlton, was represented as having developed plans with respect to the newspapers as the result of visits to the papers by W. H. Oldham, Republic district manager.

Introduced before the committee was a memorandum dated July 10, 1937, prepared by Mr. Bowerfind and addressed to Mr. Wysor, which approved of an analysis of the Birmingham newspaper "situation" by Mr. Mann. The memorandum also sug-

gested contacting Mr. Hanson, and the added observation was made that "some pressure might also be judiciously exerted through the advertisers in Birmingham." Mr. Mann also wrote a letter, dated June 29, 1937, to Mr. Wysor naming prominent Birmingham citizens who were said to have personal influence with Mr. Hanson, and who, it was proposed, should help Republic build up a "real competitor" in Alabama for the United States Steel Corp.

Won't Stay Put

A letter to Mr. Wysor, written by Mr. Oldham under date of July 6, 1937, said that Mr. Mills "won't stay

put when you get him put." Attention of Witness Oldham also was called to a letter of July 28, 1937, addressed, at the suggestion of Mr. Mills, Mr. Oldham said, to the Citizens National Committee of Johnstown, Pa., asking for advertising for The Birmingham *Post* because it had become "more positive" in its attitude toward the "situation." Personal visits by influential Birmingham citizens to editors also were mentioned in a letter of July 9, 1937, written to Mr. Wysor by Mr. Oldham. In a subsequent letter to Mr. Wysor, Mr. Oldham said he did not feel that the visit to Mr. Hanson had done any good. Mr. Oldham expressed opposition to lavishing much attention on local editors, pointing out that they were usually taken to speakers' tables at meetings "and then they get out and write New Deal and other stuff in opposition to industry."

Mr. Oldham said he was a member of the Citizens' League and the Constitutional League when he was asked by Senator LaFollette regarding reference in a letter to Mr. Wysor to an organization to fight the CIO.

Republic Policy Explained

Mr. Wysor told Senator LaFollette that it was Republic's policy to contribute to national organizations and to communities in which the company has interests in explanation of a record introduced by the Senator showing Republic expenditures of \$1,425,696 in 1933-1937 to employers' associations, of which \$219,000 was said to have been paid the American Iron and Steel Institute. The Senator also submitted an Institute advertisement, said to have cost \$114,365, which appeared in 382 newspapers in 34 states and the District of Columbia, prior to the July, 1937, steel strike.

Roy Moore, general manager of the Brush-Moore newspapers, told the committee he called on Vice-President Charles M. White of Republic and asked for a statement on the strike to be carried in an "extra" of the Canton, Ohio, *Repository* on May 27, 1935. Mr. Moore declared that Mr. White attempted without success to stop the "extra."

Read into the record also were extensive statements and advertisements designed to show that the National Association of Manufacturers and steel companies were seeking to influence public opinion as SWOC was making drives in 1936 to organize the steel and rubber industries. The criticism was made because this material was signed by civic organizations and did



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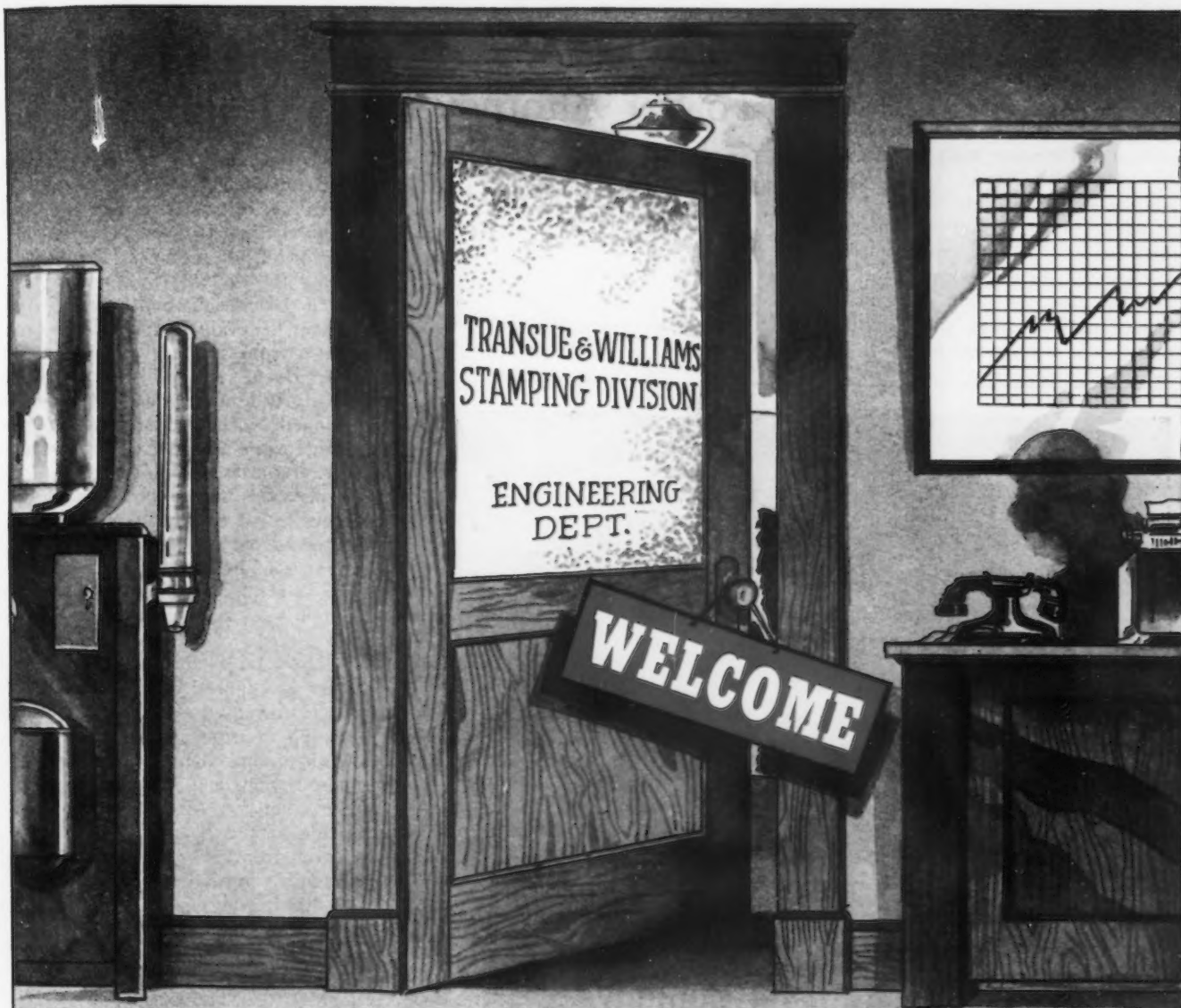
● Now you can speed up flat fillet welding on production work — with a new rod that produces a surprisingly smooth weld of unusually high ductility. ● You will be impressed with the way the metal flows from HI-TENSILE "G", with the very small spatter and slag losses and with the way the finished job stands inspection. Meets all A.W.S. specifications, Grade 10. ● Your local Page distributor will show you many advantages that HI-TENSILE "G" makes possible.



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not indicate the sources of funds to pay for its publication. In this connection criticism was directed at material written for the NAM and steel companies by George S. Sokolsky, author and lecturer, who was engaged by Hill & Knowlton. In a letter to the press, Mr. Sokolsky replied to the attack on him. He said his connection with both NAM and steel companies has been public for several years and declared that the right of industrial organizations to seek and obtain expert advice is incontestable.

Weirton May Test NLRB's Right To Bar Attorney From Hearing

WASHINGTON.—The question of whether or not the National Labor Relations Board has authority to "disbar" an attorney is headed for a test in the courts, it has been strongly intimated by Earl F. Reed, who appeared before the full board last Wednesday on behalf of

his law partner, Clyde A. Armstrong, Weirton Steel Co.'s chief counsel.

Mr. Armstrong was ordered ousted from further Weirton hearings at an uproarious session in Steubenville, Ohio, July 7, by Trial Examiner Edward Grandison Smith. Mr. Armstrong had vainly attempted to prove that a witness named John Bruda had been given a union card which did not belong to him and had been asked by Kenneth Koch, CIO organizer, to give false testimony. Mr. Smith ordered Mr. Armstrong to sit down. Mr. Armstrong said he would accede to a request, but not to an order. He refused to obey the order. The ouster was issued by Mr. Smith, who accused the Weirton attorney of "defiant, contemptuous and contumacious conduct."

The trial examiner's action, which later was upheld by the Labor Board itself, incensed spectators, including many Weirton steel workers and Weirton merchants who bitterly oppose SWOC and are sympathetic with the company. A demonstration was made at the hearing followed by a march from Weirton, W. Va., on Steubenville, and the hanging of Mr. Smith in effigy as a protest against the trial examiner's action.

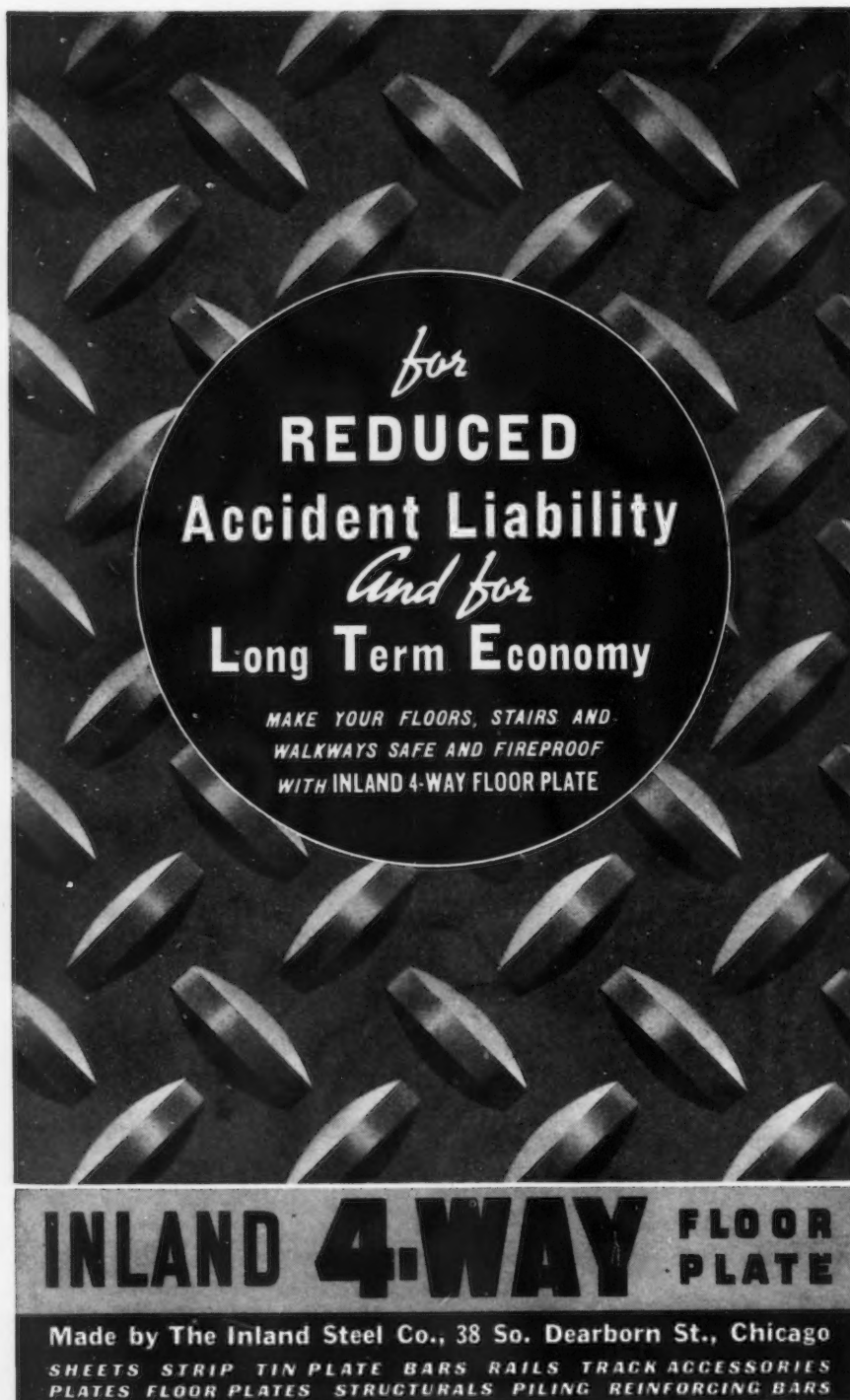
Madden Wants Apology

Mr. Reed had not proceeded far in his argument that the board has no authority to punish for contempt but must go to court to enforce its order before the session became heated and noisy. There were charges and countercharges, coming to a climax when Mr. Armstrong refused to yield to the suggestion by Chairman J. Warren Madden that Mr. Armstrong apologize and "give assurance as to your conduct."

"I say this with all due respect," Mr. Armstrong answered, "if I for one moment felt I had done anything for which I should apologize, I would never hesitate under such circumstances to do so."

"In this particular instance I was protecting a client in an attempt to state reasons on the record. I know of nothing that I did that was wrong, nothing for which I should apologize, when I was doing what I honestly thought and still think it was my right and duty to do."

Stoutly defending his client, Reed said that if Armstrong "in a case like this, when it would mean willingness



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to cringe and bend to whatever treatment might be handed out to him, his usefulness to his client would be gone."

In the course of a vigorous presentation, Mr. Reed directly charged that Mr. Madden had secretly conferred with Mr. Koch, through an appointment made by Trial Examiner Smith, in the Weirton case and further accused Donald Wakefield Smith, NLRB member, with having "made disparaging remarks relative to counsel for the company" at a Weirton hearing. He also charged that Trial Examiner Smith had conferred in Washington with the board's chief examiner, George Pratt, as to means to oust Mr. Armstrong from the hearing and that the trial examiner had held secret meetings with NLRB counsel and SWOC organizers regarding what rulings would be made in the case.

Mr. Madden, angered, looked at Mr. Reed and said, "You ought to be ashamed of yourself, Mr. Reed, to stand before this audience and make such a demagogic remark. What is the point of such a statement? It is true that I saw Mr. Koch, whom I know, standing in the corridor outside my office and invited him in. I talked to him about 10 minutes and would have done the same thing had it been you. It appears to me that your remark was addressed to the press and not to the board." Mr. Madden denied that an appointment, to his knowledge, had been made with him for Mr. Koch.

Mr. Reed replied that he had cited the incident, of which Mr. Armstrong was aware, to illustrate difficulties under which Mr. Armstrong functioned during the Steubenville hearing. Mr. Reed maintained these difficulties were responsible for the conduct which led to the ousting of Mr. Armstrong.

Fiery D. W. Smith, partly rising from his seat, declared heatedly that he would put Mr. Reed, Mr. Armstrong and the rest of the Weirton lawyers on the stand and "make them prove that." Mr. Reed asserted forcefully that the charges he had made were true and that they would all be ready to go before the "proper tribunal and at the proper time," evidently having in mind the Circuit Court of Appeals. He likewise took the same position with respect to charges that Trial Examiner Smith had held secret meetings with board counsel and SWOC organizers. The trial examiner, placed on the witness stand by Charles Fahy, NLRB gen-

eral counsel, did not deny the charges and seemed hesitant and uncomfortable as he underwent sharp cross-examination at the hands of Mr. Reed.

The tall, gray-haired trial examiner said he had consulted with Mr. Pratt "as to procedure in case I decided to exclude Mr. Armstrong," maintaining that the Weirton attorney protested against the order in "a defiant, snarling manner." Mr. Reed inquired of the trial examiner if he had not talked one month ago with the counsel of

the board on how to get Mr. Armstrong out of the hearing and who might take his place. Mr. Smith, pausing to make reply, said he did not recollect.

"Would you deny it?" inquired Mr. Reed.

The trial examiner finally and with apparent reluctance admitted that he might have discussed the matter with the board and also that he might have discussed questions of procedure with board representatives.

+ 60%

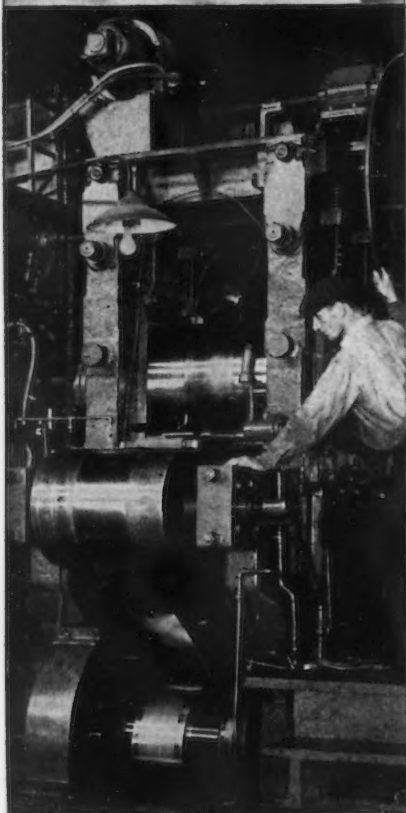
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Walsh-Healey Law Disappoints Sponsors

WASHINGTON.—The Walsh-Healey Government Contract Act, through which the SWOC and the Administration reputedly hope to avert wage slashes in the steel industry despite recent price drops, has been disappointing to organized labor and its Congressional sponsors ever since it was put on the statute books more than two years ago.

A score of attempts have been made to extend the law which requires that firms doing business with the Government must adhere to certain prescribed labor standards. Holders of contracts amounting to less than \$10,000 are immune from the law but both Senator Walsh and Representative Healey, both Democrats of Massachusetts, early in the first session of the 75th Congress unsuccessfully tried to push through a measure broadening the act to include contracts for \$2,500 and over. Subsequently, Secretary of Labor Perkins maneuvered to include under the original Black-Connery wage-hour bill an amendment which would bring contracts of \$2,000 or more under the Walsh-Healey law.

The provision, of course, never became law since the wage-hour bill failed of enactment. It was later dropped completely when the House Labor Committee rewrote the minimum wage measure which later passed both Houses of Congress.

Broadened Law Sought

Early in 1938 the NLRB and the CIO joined in an effort to seek passage of a broadened Walsh-Healey amendment which not only would have affected contracts of \$2,000 and above but would have, in effect, permitted the Labor Board to determine which companies were violating the Wagner Act—a determination which, when passed on to the Government Contracts Board, would have denied them Government business. AFL President William Green, while indorsing the measure in principle, protested on the ground that the NLRB would be given increased power under the bill which he said might further open the door for board discrimination against particular unions.

The measure, sponsored by Senator Wagner, Democrat of New York, was subsequently revised in both Houses and went down to defeat after the House Rules Committee—the same

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committee which stymied the wage-hour bill for over six months—refused to grant the measure right-of-way to the House floor. It was over this incident that John L. Lewis "occupied" Speaker Bankhead's office on two occasions during the last-minute rush of adjournment, pressuring members to vote for the bill. The Rules Committee was adamant, however, and the measure was still bottled up in com-

mittee when Congress voted to adjourn.

Labor's Non-Partisan League, CIO adjunct and political mouthpiece of John L. Lewis, recently listed a majority of the members of the Rules Committee, together with more than 30 other Congressional members, against whom the CIO will muster their forces at the polls in an attempt to prevent reelection.

Low Inventories, Not Price Cut, Lift Steel Output, Weir Finds

POSSIBLE continuation of the current increase in steel buying for another six months is forecast by Ernest T. Weir, chairman, National Steel Corp. He said:

"The industry shows some gradual increase. It may continue until next year but there is no telling how far it will go. Those things just can't be predicted, there being too many ele-

ments at a time like this for long-range predictions.

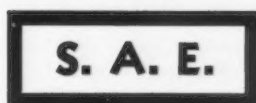
"This buying increase comes as purchasers deplete their inventories. When the steel operating rate followed buying down last winter, most users had great inventories on hand and could not justify further purchases. They had no immediate outlet for their products and could see none in the near future. Now much of this surplus is gone. That is where the new buying originated. This would have come regardless of the price of metals."

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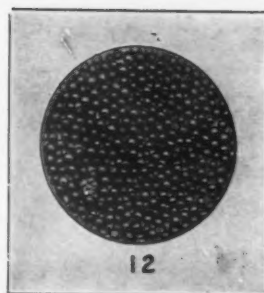
CLEVELAND

CHICAGO

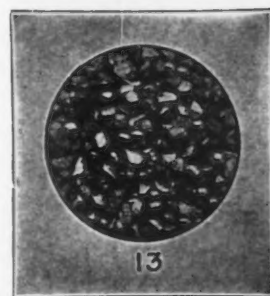
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. . . THE NEWS IN BRIEF . . .

Willys' \$26 price cut hints at general reduction in auto prices. Factory reconditioning of used cars by Ford is rumored as new program. Ford seeks to lower weight per horsepower in V-8 engine with 85 lb. reduction as goal. Page 40.

Nation given distorted view of Republic Steel's labor policy, R. J. Wysor tells LaFollette Committee. Girdler to be a witness. Test expected of Labor Board's attempt to "disbar" Weirton Steel's chief counsel. Page 46.

American price cuts reported by cartel.—Page 45.

Sheet data booklet is offered to trade.—Page 45.

Ernest T. Weir maintains low inventories, not price cut, will lift steel output.—Page 53.

Genesee Tool Co. enters cutting tool field, the plant being completely equipped with up-to-date machinery for tool production.—Page 57.

New England manufacturers at no serious disadvantage because of changes in steel basing points.—Page 56.

Verity Parkway, a new boulevard named for George M. Verity, chairman and founder of American Rolling Mill Co.—Page 63.

New color film shows abrasive blasting.—Page 63.

Windsor Automatic Co. taken over and to be operated as a division of the Billings & Spencer Co. of Hartford.—Page 63.

G. E. awarded ship machinery contract.—Page 63.

Columbia Boiler Co. buys Pottstown plant.—Page 63.

American Welding Society plans record meeting at Detroit Oct. 16-21.—Page 83.

British opposed to stabilized prices.—Page 83.

Ford Steel making to resume Aug. 8.—Page 64.

National Steel to spend \$5,000,000 on Weirton plant.—Page 64.

June structural steel orders at year's peak.—Page 64.

British iron and steel output lower in first half.—Page 64.

Resistance welders study specification revisions.—Page 64.

National Steel earns 46c. in second quarter.—Page 78.

U. S. Agency holds up ruling on SWOC demand steel wage cut be blocked.—Page 72.

J. & L. Quarterly loss reported at \$1,654,303.—Page 73.

Second quarter reports show drop in earnings in steel and allied industries.—Page 74.

Wages must come down or prices must go up, says Inland Steel.—Page 74.

U. S. Steel quarterly loss is \$5,010,426.—Page 74.

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CONVENTIONS

Sept. 26 to 30—Association of Iron and Steel Engineers, Cleveland.

Oct. 10 to 14—American Institute of Steel Construction, French Lick Springs, Ind.

Oct. 12 to 15—The Electrochemical Society, Rochester, N. Y.

Oct. 13 to 15—Society of Automotive Engineers, aircraft production meeting, Los Angeles.

Oct. 17 to 21—National Metals Congress, Detroit.

Oct. 17 to 20—American Institute of Mining and Metallurgical Engineers, Detroit.

Oct. 31 to Nov. 2—National Foreign Trade Council, New York.

Dec. 5 to 10—Exposition of Power and Mechanical Engineering, New York.

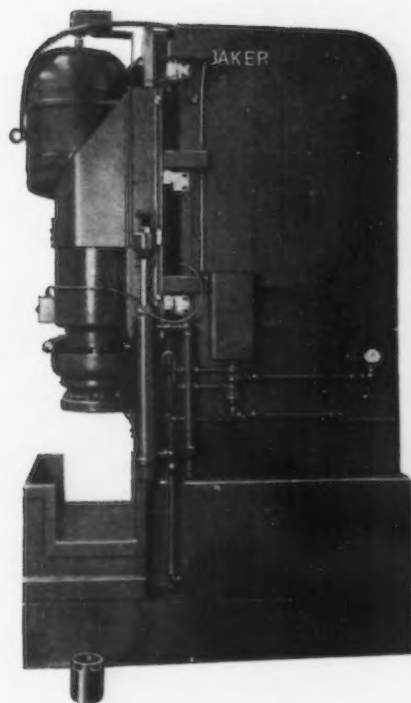
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New England Manufacturers at No Serious Disadvantage Because of Changes in Steel Basing Points

HARTFORD, Conn.—Although New England produces a very small portion of the country's steel (276,021 tons of ingots in 1937 out of a total of 50,568,701 tons), it is

a large consumer of steel products, most of which are shipped in from outside mills. Because of this situation, New England was selected by **THE IRON AGE** for a study of the ef-

fects of the recent basing point changes.

Comment had been heard that New England, because of its geographical position at a distance from major steel centers and equally distant from the large Middle Western area into which many of its finished products go, might find itself in a decidedly disadvantageous position under the new basing point set-up.

This does not appear to be true except in a few isolated instances. Products in which steel is probably the most important item of cost, or at least a very large factor, such as drop forgings and bolts and nuts, for example, will be handicapped somewhat in meeting competition of like products made in plants more centrally situated with respect to basing points, but in a wide range of its products New England seems to be at no serious disadvantage, and in some cases actually gains from the changes.

Many of the articles made of steel for which New England is famous are of the type in which craftsmanship plays a more important role than cost of materials. In this category may be placed machine tools, firearms, cutlery, small tools, builders' hardware and many other similar items. In none of these articles is the cost of steel as important as the cost of labor.

Will Save on Steel

Although New England manufacturers will save considerable amounts in their steel bills, the savings are comparatively little when expressed in terms of the manufacturer's finished product. On the one hand, a manufacturer whose product requires a great deal of fine precision work said that steel at 10 times its present cost would not affect the selling price of the finished article. Another manufacturer whose steel savings will average about \$3.50 a ton has estimated that the unit cost of its product will be affected only a few mills. Notwithstanding such small savings in unit costs, some manufacturers have been asked by their customers to lower their prices on finished products, a factor which now appears to be delaying the placing of orders in some lines, just as it was believed some weeks ago that the expectation among buyers of a reduction in steel prices caused the withholding of all but most essential steel orders.

Manufacturers in New England whose products are sold on a country-wide basis may be obliged to accept lower net prices in shipping to sections of the Middle West where lower

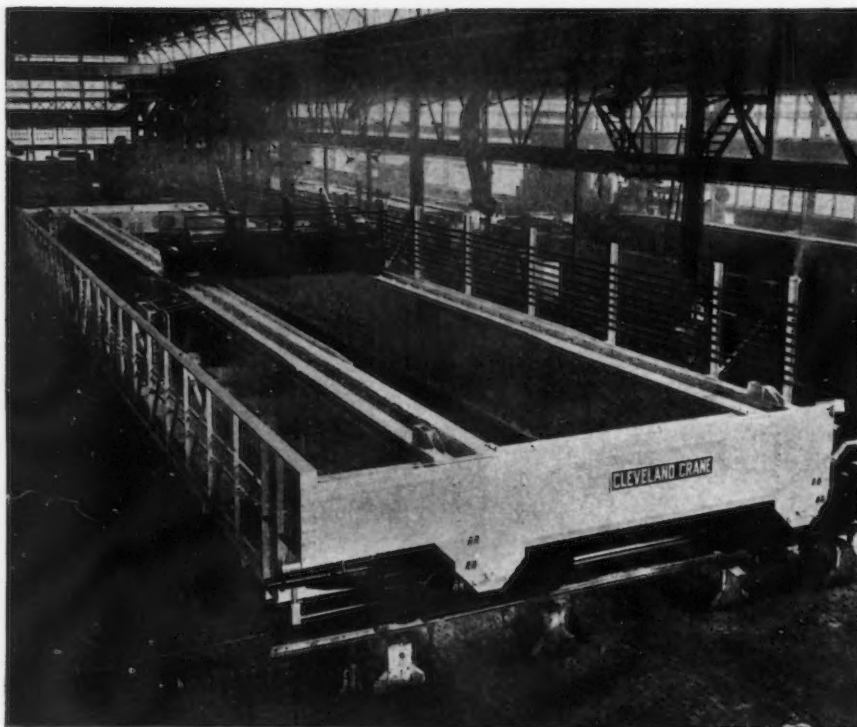
CLEVELAND

All Welded for



CRANES

Every Industry



● One Hundred and Twenty Foot Span (120'-0") sixteen foot spread (16'-0") fifteen ton three motor All Welded Cleveland Steel Mill Crane.

ALSO BUILDERS OF



THE CLEVELAND CRANE & ENGINEERING CO

1115 Depot St.

WICKLIFFE, OHIO

NEW YORK • DETROIT

PITTSBURGH • CHICAGO

MATERIALS HANDLING EQUIPMENT

delivered prices for steel are available, but to offset such concessions they will have an advantage in New England and adjacent areas in the East, and they also get the benefit of the adoption of Eastern steel basing points on some products.

Examples of Savings

For example, on hot rolled bars New England manufacturers now have the advantage of a Buffalo base whereas formerly they bought on a Pittsburgh base. When bars were quoted at 2.45c. a lb., Pittsburgh, the Boston consumer paid this price plus 44c. per 100 lb. freight, or 2.89c. a lb., delivered; now he can buy bars on a Buffalo base of 2.25c., with 37c. per 100 lb. freight, or 2.62c. a lb., delivered, a net saving of \$5.40 a ton, or \$1.40 more than the \$4 a ton reduction in price. If the buyer is in a 41c. freight zone from Pittsburgh, as Hartford is, for example, he now pays 2.61c. a lb., delivered, on a Buffalo base against a former delivered price from Pittsburgh of 2.86c. a lb., a total saving of \$5.20 a ton. On cold rolled sheets, which can now be bought on a Buffalo base at 3.20c. a lb., the Hartford buyer pays 3.55c. a lb., delivered, against a former price of 3.35c., Pittsburgh, plus 41c. freight, or 3.76c., a total saving of \$4.20 a ton. On hot rolled sheets, the situation is different because Sparrows Point, Md., becomes the advantageous basing point rather than Buffalo. (Sparrows Point is not a base on cold rolled sheets.) The freight rate from Sparrows Point to Hartford is 31c. against 35c. from Buffalo; therefore there is a net saving of 80c. a ton as compared with Buffalo. Comparing with the old situation (which, however, is somewhat complicated by the system of a single base for hot rolled sheets and one for cold rolled adopted last May), there is a total saving at Hartford on hot rolled sheets of \$5 a ton. It works out like this: The 2.30c. Pittsburgh base for hot rolled sheets made a delivered price at Hartford of 2.71c. a lb. The hot rolled base was reduced to 2.15c. and Sparrows Point was made a basing point. Thus the Hartford delivered price becomes 2.46c., the freight rate from Sparrows Point being 31c. per 100 lb.

On cold rolled strip Worcester becomes the lowest base for most of New England even though the differential over Pittsburgh or Cleveland is \$4 a ton. On this item, of which there is considerable consumption in New England, the situation is not much different than formerly except that the price at all basing points is lower.

Genesee Tool Co. Enters Cutting Tool Field

GENESEE TOOL CO., Fenton, Mich., has announced its entry into the cutting tool field. Originally established in 1934 to produce dies, stampings and other production parts, the company now offers a complete line of high quality standard and special tools. The line includes turning and facing tools; standard side and plain milling cutters; alternate tooth cutters; circular and flat form tools

of all types; circular saws; involute gear cutters; reamers; boring bars; cutter blades; tool bits; and special tools.

The company's modern plant has been completely equipped with up-to-date machinery for tool production, according to Clarence Moen, president. Mr. Moen has years of experience in connection with small tools, particularly in the automotive industry. The company has issued an attractive bulletin illustrating the tools it is offering to industry.



**You can vary
Hele-Shaw Fluid Power**

Quicker

**than a woman can
change her mind**

Hele-Shaw Fluid Power is oil under pressure. It provides instant and precise control. You can change its direction and vary its speed or pressure from zero to maximum, g-r-a-d-u-a-l-l-y or *instantly*—yes, quicker than a woman can change her mind.

This is one reason why so many machine designers, builders, and buyers are specifying Hele-Shaw Fluid Power for obtaining *controlled* linear or rotary motion. But there are other equally important advantages. Hele-Shaw Fluid Power offers wide flexibility of location. It increases production by instant and automatic adjustment to operating conditions. It sustains its pressures with a minimum loss of energy. Pumps, motors and transmissions are self-lubricating.

Write us for complete details. Ask us to show you how Hele-Shaw Fluid Power can be applied to advantage to the machinery you design, build or buy. Specify Hele-Shaw.



**A-E-CO
HELE-SHAW
FLUID
POWER**

PUMPS, MOTORS & TRANSMISSIONS



**A-E-CO
Hele-Shaw
FLUID
POWER**

OTHER A-E-CO PRODUCTS: Lo-Hed Hoists, Taylor Stock Units, Marine Deck Auxiliaries.

AMERICAN ENGINEERING COMPANY

2410 ARAMINGO AVENUE, PHILADELPHIA, PA.

..PERSONALS..

ERNEST F. TALMAGE has joined the alloy sales organization of Youngstown Sheet & Tube Co. in Chicago. Formerly he was Chicago district sales manager of Timken Steel & Tube Co. and for the last 18 months western sales manager for Braeburn Alloy Steel Corp. Prior to his association with Timken, Mr. Talmage was with the Pittsburgh Crucible Steel Co. for nine years.

WALTER WILLIAMSON has been elected vice-president of the Westinghouse Electric Supply Co., Pittsburgh. He formerly was manager of apparatus and supply sales for Westinghouse. Mr. Williamson was president of the Alpha Electric Co. of New York when that organization was acquired by Westinghouse Electric & Mfg. Co. in 1926, continuing as general manager of the eastern district of the Westinghouse Electric Supply Co. until June, 1930. At that time he

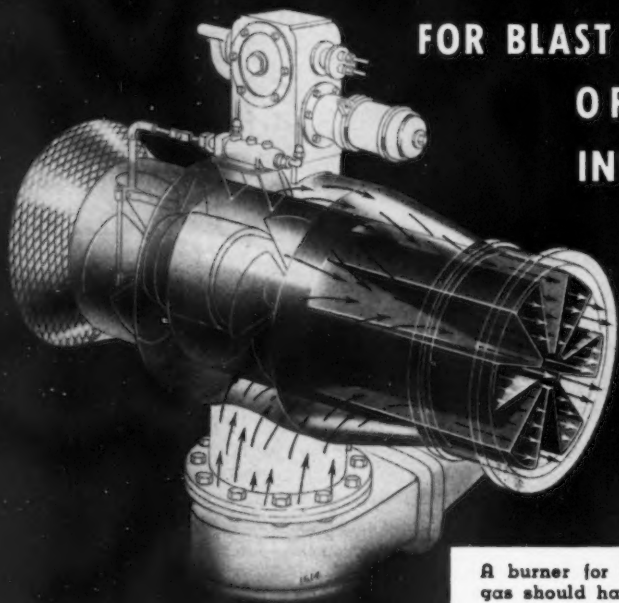
was transferred to headquarters as manager of supply sales, which position he held until his recent election.

♦ ♦ ♦

C. W. BRIGGS, physical metallurgist for the Naval Research Laboratory, Washington, has been made technical engineer for the Steel Founders' Society of America, Cleveland. Among

BRASSERT GAS BURNER

FOR BLAST FURNACE
OR OTHER
INDUSTRIAL
GASES



A burner for blast furnace gas should have the following characteristics:

- 1 Intimate mixture of air and gas.
- 2 Accurate regulation of air supply.
- 3 Sturdiness and slow speed in air fan motors.
- 4 Compactness or high capacity in relation to size.
- 5 Simplicity.
- 6 Convenience.
- 7 Low first cost.
- 8 Economy in operation.

All these requirements are fulfilled by the Brassert Burner

THIS burner furnishes air of combustion by means of the Wing compound motorized Blower, which gives maximum economy and reliability. Regulation is by means of an Askania control especially adapted to this application. This burner is equally well adapted to stoves or boilers. It gives the shortest possible flame, and therefore is particularly suited to boiler use. As applied to hot blast stoves, it avoids the puffing frequently encountered. Details of design may be altered to suit local conditions. *For particulars write to.*

H. A. BRASSERT and COMPANY

310 South Michigan Avenue
CHICAGO, ILLINOIS

436 Seventh Avenue
PITTSBURGH, PENNA.



C. W. BRIGGS

the projects which he will initiate will be the development of a cast steel data book. Mr. Briggs is a graduate of Stanford University and since his graduation has devoted most of his time to research work for the Navy.

♦ ♦ ♦

C. M. PETER, formerly export sales manager and for the past 15 years managing director of Black & Decker, Ltd., has joined the Fellows Gear Shaper Co., Springfield, Vt., as general sales manager. He will make his headquarters at the company's Detroit office in the Fisher Building. He succeeds W. F. SLOMER, who has found it necessary to give up his active connection with the company because of ill health.

♦ ♦ ♦

A. D. BRODIE has been appointed superintendent of Jones & Laughlin Steel Corp.'s cold strip mill at Pittsburgh. He formerly was metallurgical engineer of the corporation in the Detroit area. Previous to his association with Jones & Laughlin, Mr. Brodie was connected with the Inland Steel Co. as a chief inspector and metallurgist in the Detroit area. Previous to

that he was employed by the Wheeling Steel Corp. as chief inspector of its 48-in. cold strip mill.

Born and educated in Glasgow, Scotland, he came to the United States in 1914 and entered the chemical and physical laboratory of Wheeling Steel Corp.

KARL B. McEACHRON, director of high-voltage research and in charge of natural and artificial lightning studies at the Pittsfield, Mass., works of the General Electric Co., has received the degree of doctor of engineering from Ohio Northern University.

LOUIS WILPUTTE, president of the Wilputte Coke Oven Corp., New York, sailed for Europe on June 23 to observe recent developments in coke oven construction abroad.

C. RAYMOND MESSINGER, president of the Chain Belt Co., Milwaukee, and chairman of the board of the Oliver Farm Equipment Co., Charles City, Iowa, has been elected a member of the board of the alumni association of Yale University.

H. L. BUSHMAN has been appointed manager of the newly-opened Chicago office, at 549 West Washington Boulevard, of the American MonoRail Co., Cleveland.

THOMAS WEISKOPF, formerly assistant superintendent of the Massillon, Ohio, plant of the Union Drawn Steel division of Republic Steel Corp., has been appointed superintendent, succeeding the late John S. Lynch. FRANK GARVEY has been appointed assistant superintendent. Mr. Weiskopf has been identified with Union Drawn Steel for 35 years.

NORMAN R. DOWNIE, formerly engaged in the sale of wire rope in the New York sales district for Bethlehem Steel Co., has been transferred to the home office at Bethlehem, Pa., and will assist C. M. BALLARD, manager of wire rope sales. Mr. Downie was connected with the former Williamsport Wire Rope Co., as Eastern manager from 1925 until the company was acquired by Bethlehem last year.

THAYER B. FARRINGTON, identified in mechanical engineering and manufacturing circles many years, has opened a consulting office in the Central National Bank Building, Cleveland. He was employed in the Mesabi

iron range following graduation from Columbia University School of Mines and later became assistant general superintendent of motive power at Chicago for the Pennsylvania Railroad and later became vice-president and general manager of the Pacific-Goodrich Co., in Los Angeles.

A. E. NORTON, manager of the Nathaniel Tufts Meter Works in Boston of the American Meter Co., New York; W. H. KAISER, superintendent of the Erie, Pa., plant of the company, and

NORTON McKEAN, vice-president of the company, this year complete 40 years of continuous service with the company.

WILLIAM J. DALY, formerly Detroit district sales manager for Worthington Pump & Machinery Corp., Harrison, N. J., has been transferred to the company's Philadelphia office to succeed the late C. H. Shaw. Mr. Daly has been identified with Worthington since his graduation from Notre Dame University in 1922.

GOODYEAR
another distinguished name in the WHO'S WHO OF AMERICAN INDUSTRY
using
LAKE ERIE
HYDRAULIC PRESSES

The officials of the Goodyear Rim Plant, faced with requirements for horn presses, "put it up to Lake Erie" engineers to develop a modern high speed, compact and efficient design, eliminating certain difficulties found in other presses.

The result is illustrated at the left—one of four such presses now in regular "preferred" operation by Goodyear.

These presses are used for coining the weld flash on automobile rims. 300 Tons capacity operating at twenty-five 3" strokes per minute.

Combined with speed of operation are many other cost reducing features, including easily adjustable pressure control, safety lever for instant return of ram at any point in stroke, strength and rigidity for precision and trouble free operation, and positive convenient foot treadle control.

The talent and wide experience of Lake Erie Engineering Corporation are at your service to thoroughly study and quickly solve your requirements for standard or special presses and machinery. You are invited to join the leaders in industry who "Put it up to Lake Erie."

**LAKE ERIE
ENGINEERING CORP.**
68H Kenmore Station
Buffalo, N. Y.

Here is Latest Information on **ROTO-CLONE** DUST CONTROL

ANY dust control system to perform economically and efficiently must be carefully engineered and the component parts properly designed and correctly installed. To help manufacturers with process dust problems to better understand the installation of an efficient dust collecting system, we have issued this bulletin on the Type D Roto-Clone. It contains complete engineering data and suggested specifications for the construction of branches and mains, standards for piping construction and approved methods of installation. If you have a dust problem this bulletin will be of inestimable value in developing a satisfactory solution. Write today—just ask for Bulletin No. 272.

AMERICAN AIR FILTER CO., INC.
Incorporated
124 CENTRAL AVE., LOUISVILLE, KY.
In Canada: Darling Bros., Ltd., Montreal, P. Q.

AMERICAN AIR FILTER CO., INC.
124 Central Ave., Louisville, Ky.

Gentlemen:

Please send me without obligation a copy of your Roto-Clone Bulletin.

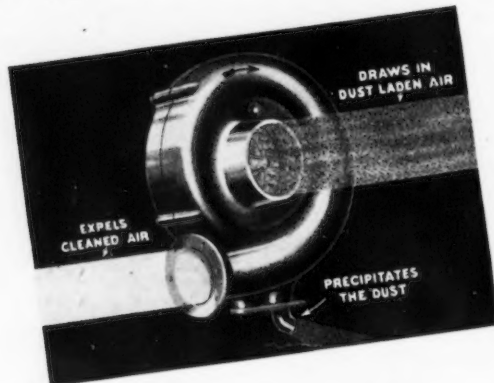
Name _____

Company _____

City _____ State _____

ROTO-CLONE *Dynamic Precipitator*

Patented and Patents Pending in U. S. A. and Foreign Countries



TYPE-D ENGINEERING DATA



Combined Exhauster and Dust Separator

**SENT FREE
WITHOUT OBLIGATION
USE THE COUPON**

...OBITUARY...

FREDERICK A. LORENZ, JR., vice-president of American Steel Foundries, Chicago, and president of the Steel Founders' Society of America, died on July 23, after a protracted illness. He was 52 years old.



FRANK C. GIBBS, general superintendent in charge of installation, National Regulator division of Minneapolis-Honeywell Regulator Co., died suddenly on July 11 of heart disease at his home in Oak Park, Ill. Mr.



F. A. LORENZ, JR.



F. C. GIBBS

Gibbs, who was an authority on pneumatic temperature control, began work with the company 28 years ago as a field installation man. A graduate of Ferris Institute and University of Michigan School of Engineering, he taught school in Michigan prior to his business affiliation, and served overseas during the War.



ALBERT A. GECK, vice-president, Breckenridge Machine Co., Cleveland, builder of special machinery, died July 17 in Cleveland. Born in Detroit, he became an apprentice in the Baker Brothers plant in Toledo and upon leaving that company in 1920 had risen to general superintendent. Prior to going to Cleveland, Mr. Geck was

general manager of the Colburn Machine Tool Co., Franklin, Pa.

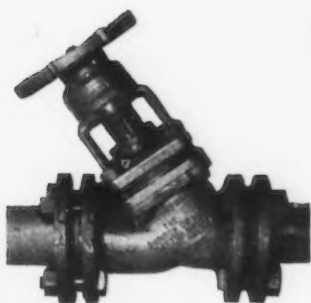


H. R. ATWATER, vice-president, Osborn Mfg. Co., Cleveland, and connected with that company for 45 years, died at his home in Los Angeles, July 16, aged 72 years. Due to ill health, Mr. Atwater in 1922 resigned his position as sales manager of the molding machine division and moved to California, where he had since resided.



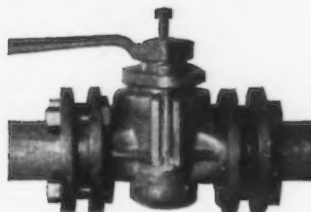
FREDERICK B. WINSLOW, retired auditor of the Tennessee Coal, Iron & Railroad Co., died July 19, aged 73 years. Mr. Winslow retired in 1932

VALVES for any acid service



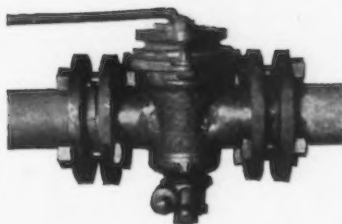
The Y Valve

Acid resisting . . . for places where valve is seldom turned . . . rising stem . . . outside screw and yoke . . . full opening . . . can't stick or score . . . all parts mechanically aligned . . . split flanges for Duriron pipe; companion flanges for lead or screwed pipe.



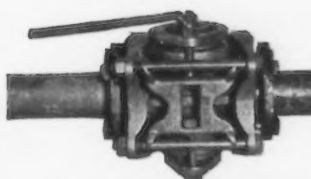
Nordstrom-type Valve

Acid resisting . . . plug valve with lubricant ducts . . . stuck plug releases by hydraulic pressure . . . seating surface lubricated . . . lubricating ports prevented from contacting solution handled . . . useful with acids having no lubricating properties.



The Type 600 Valve

Acid resisting . . . new type plug valve with lubricating feature . . . head deeply recessed to prevent twisting off . . . lubricant travels in straight line . . . positive stop prevents exposure of lubricant ducts to acid handled. . . Sizes: 1", 1 1/2", 2", 3", 4" and 6".



The "P.R." Valve

Acid resisting . . . plug valve with mechanical plug-releasing feature . . . valuable for handling acid sludges and solutions containing abrasives . . . also where lubricated valve is not permissible . . . flanges of either malleable iron or acid-resisting alloy.

Send for Bulletin No. 601 for details.

THE DURIRON COMPANY, Inc.

438 N. Findlay St.

Dayton, Ohio

after having been with the company since 1907.

♦ ♦ ♦

GEORGE J. BLACK, general purchasing agent, Standard Sanitary Mfg. Co., Pittsburgh, died July 18 at his home in Pittsburgh. He was 42 years old.

♦ ♦ ♦

GEORGE H. RICHTER, a pioneer manufacturer of metal furniture in Boston, died July 20, in the Laconia

Hospital, Laconia, N. H. He was born in Lowville, N. Y., 78 years ago; established a metal furniture business in 1903. He retired from business in 1925.

♦ ♦ ♦

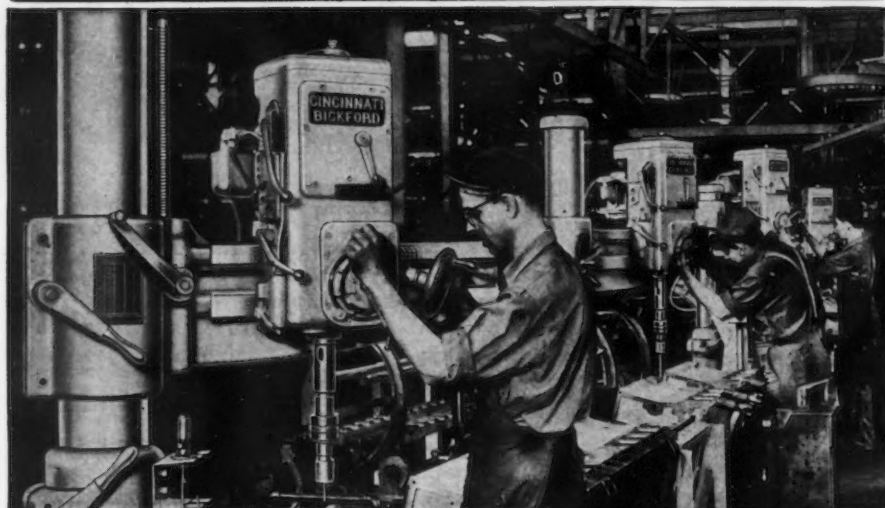
DAVID MERRILL AVERILL, of Racine, Wis., for 40 years a production executive in the automotive industry, died on July 16, aged 59 years. He was born at Otisville, Mich., and in 1898 became a clerk in the Durant-Dort

Carriage Co., Flint, Mich., under Charles W. Nash. The firm later became Durant Motor Car Co. During 1922 he took a year's leave of absence to assist Louis Chevrolet in establishing the Chevrolet Motor Co., and in 1924 rejoined Mr. Nash as general manager of the Nash Motors Co. main plants in Kenosha and Racine, Wis., being compelled a year ago to retire because of failing health.

♦ ♦ ♦

CHARLES MAJOR, former manager of the Pencoyd rolling mills and foundries of the American Bridge Co.,

Tapping Tractor Cylinder Blocks for Caterpillar Tractor Co.



with NEW 2½' High Speed Super Service Radials

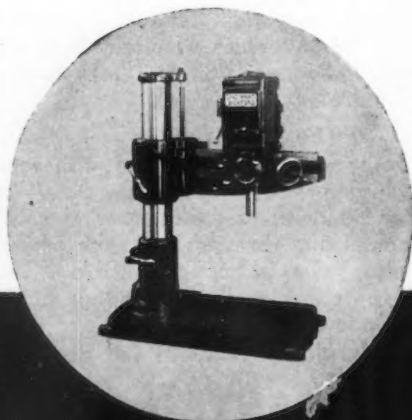
Production tapping is highly profitable on work such as that handled on the new Sensitive, High Speed Super Service Radials in the plant of the Caterpillar Tractor Company, Peoria, Illinois.

There are 13 of these machines in this plant. Those shown here are performing the following operations: tapping front end, tapping angular side, tapping top and tapping straight side of 4-cylinder 3¼" bore cylinder blocks.

These new 2½' Super Service Radials have a 7½" dia. column and are driven by 1 H.P. motors. Modern in every detail, flexible and easily controlled, they insure profitable hole production on a wide range of work.

Get all the details

**The CINCINNATI BICKFORD
TOOL COMPANY**
Oakley, Cincinnati, Ohio



**SUPER-SERVICE
RADIALS**



RUSSELL B. HURLBURT, foreign sales manager for Pratt & Whitney, Division Niles-Bement-Pond Co., New York, whose death was announced in these columns last week.

Pencoyd, Pa., died at his home in Norristown, Pa., on July 14. He became identified with the company in 1879 and retired 42 years later. He was 82 years old.

♦ ♦ ♦

JOHN L. W. BIRKINBINE, consulting engineer, Philadelphia, died at his home in Cynwyd, Pa., on July 17, aged 61 years. In 1915 he succeeded his father as head of the Birkinbine Engineering Offices and during his later years served as consulting engineer for the National Tube Co.

♦ ♦ ♦

FRANK J. TUITE, for more than 25 years a member of the engineering and sales departments of the Robins Conveying Belt Co., New York, died on July 20.

Middletown Ready to Open Verity Parkway

THE city of Middletown, Ohio, on July 29 will dedicate Verity Parkway, a new boulevard named for George M. Verity, chairman and founder of American Rolling Mill Co. and Middletown's first citizen. On June 6, 1936, the Ohio town celebrated Verity Day, of which a highlight was a parade three miles long. Speakers to a throng of thousands of school children and industrial workers were former Gov. James M. Cox, of Ohio, and John H. Van Deventer, editor of THE IRON AGE. Verity Parkway is built on the site of the abandoned Miami and Erie Canal.

G-E Awarded Ship Machinery Contract

GENERAL ELECTRIC CO. has been awarded a contract to provide propelling machinery for a third turbo-electric, 18,500-ton welded tanker to be built for Atlantic Refining Co. by Sun Shipbuilding & Dry Dock Co. at its Chester, Pa., yards.

Columbia Boiler Co. Buys Pottstown Plant

COLUMBIA BOILER CO., Pottstown, Pa., manufacturer of steel boilers and tanks, has purchased and is operating the plant of the Steel Plate Products Co. at Pottstown. S. R. Morris, former president of Steel Plate Products, will direct the new division of Columbia Boiler's business.

New Color Film Shows Abrasive Blasting

"WHEELABRATING—The Modern Airless Method of Abrasive Blasting," is the title of a new industrial movie, in color, recently completed by the American Foundry Equipment Co., 555 South Byrkit Street, Mishawaka, Ind. The film gives a pictorial explanation of the Wheelabrator method of abrasive blasting and shows the various types of equipment available for cleaning general and special work in the foundry, forge shop, heat-treat shop and similar plants.

Billings & Spencer Acquires Windsor Automatic

THE business of the Windsor Automatic Co., Inc., Windsor, Vt., recently acquired by the Billings

& Spencer Co., Hartford, has been moved to Hartford and will be operated as a division of the latter company.

The principal product of the Windsor company is the Di-Matic automatic screw machine which has two spindles that are of fixed rather than of indexing type and features ease of set-up and simplicity of operation that permits short runs at economic cost.

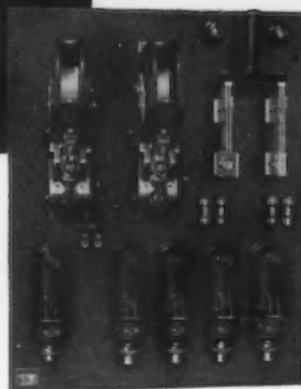
The machine is covered by the Kelley patents, exclusive rights to

which have been granted to the Billings & Spencer Co. R. R. Campbell, formerly president of the Windsor company and Elmer E. Kelley, inventor and a former officer of the same company, are now associated with the Billings & Spencer Co.

The Di-Matic machine will be manufactured in the machine division of Billings & Spencer, in which are also built board drop hammers, trimming presses, die making machines, trimmer die millers, and hot and cold saws.



Views of Front-enclosed Style with Externally-operated Knife Switch and of Open Style Protective Panels.



PROTECTIVE PANELS *for* CRANES

These are compact units for protecting the electrical equipment used on overhead, locomotive and similar cranes. They take the place of Knife Switches, Circuit Breakers, Fuses, etc., otherwise necessary and combine all the protective devices in one unit easily installed in the crane cab. The Push Button, which closes the Main Line Contactor (of LINE-ARC design) and makes the crane "live", may be self-contained on open type Panels. or when desired, may be mounted in front of the cab, adjacent to the operator.

Important Safety Features of these Panels include emergency stopping of all motors, low voltage protection which prevents accidental starts after voltage failure, provision for padlocking the main line Knife Switch open when it is desired to shut the crane down for repairs or adjustments, and other outstanding advantages.

Bulletin 1021-A gives complete information on open, front-enclosed and completely enclosed style for use on D.C. cranes having from 2 to 8 motors. Similar data is available for A.C. cranes. Mail the convenient coupon below for your copies.



HEAVY DUTY MOTOR CONTROL
FOR CRANES, MILL DRIVES AND
MACHINERY • BRAKES • LIMIT
STOPS • LIFTING MAGNETS AND
AUTOMATIC WELD TIMERS

THE ELECTRIC CONTROLLER & MFG. CO.
2688-1 East 79th Street, CLEVELAND, OHIO
Gentlemen:

Please send me complete information on
Crane Protective Panels for use with
Volt Motors.

NAME

COMPANY

ADDRESS

Ford Steel Making To Resume Aug. 8

DETROIT.—Ford open hearth furnaces at the Rouge plant will be in service again on Aug. 8 for the first time since the end of March. At that time three open hearths will be put in operation to be followed a week later by resumption of rolling mill operations preparatory to the production of 1939 model cars.

Assembly operations will be at a

standstill during the first two weeks in August in the Ford plants and probably will not be resumed until Sept. 1. However, manufacturing activity will be started Aug. 15 at the time the mill is reopened, since two to three weeks are required to build up enough bank of parts and material to resume a full schedule in the assembly plants.

Improvement in the ingot production rate in Detroit was affected this week when Great Lakes increased the number of open hearths in service from six to eight, thereby raising the

district ingot production from 29½ per cent of capacity to 47.8 per cent.

National Steel to Spend \$5,000,000

NATIONAL STEEL CORP. announced that \$5,000,000 will be spent on plants of the Weirton Steel Co. at Weirton, W. Va., in further diversification of products.

The improvement will provide production facilities for new products including an increased range of structural shapes, sections for car and shipbuilding, a full line of steel piling and other special sections. The new equipment also will roll all sections of rails including the 152-lb. section, now the heaviest used by the railroads of the country.

Work will be started on the program immediately and the new facilities are expected to be in operation by July 1, 1939. This program is in line with the National Steel Corp.'s policy of diversification.

June Structural Steel Orders at Year's Peak

ORDERS received by the structural steel fabricating industry during June were 97,546 tons, highest for any month this year. The increase, according to the American Institute of Steel Construction, contained none of the new business expected from the Government's work-relief program. May contracts totaled 77,499 tons while June bookings last year were 175,552 tons.

British Iron and Steel Output Lower in First Half

LONDON (By Mail).—During the first half of 1938 the pig iron output of the United Kingdom totaled 4,005,400 tons, against 4,011,000 tons in the same period of 1937. The reduction is 5600 tons, or 0.1 per cent.

Production of steel ingots and castings in the same six months was 5,926,500 tons, against 6,338,400 tons. The reduction is 411,900 tons, equal to 6.5 per cent.

Electric Wheel Co., Quincy, Ill., manufacturer of steel wheels, farm and log trucks, gas engine trucks and special mountings has appointed as sales representatives Otto Wilhelm & Son, 1268-69 Commercial Trust Building, Philadelphia, and the Transportation Equipment Co., 2933 Main Street, Buffalo.



and for HEAVY Overloads

The New Hi-Lift Electric Hoist is built to handle heavy loads and heavier overloads without effort and to stand up in the hardest service.

Built like a crane trolley, giving complete accessibility and most important—low headroom.

For safety and for standup quality it has a rolled steel frame, hardened steel gears, Hyatt roller bearings, heavy duty motor, alloy steel hook, and positive control.

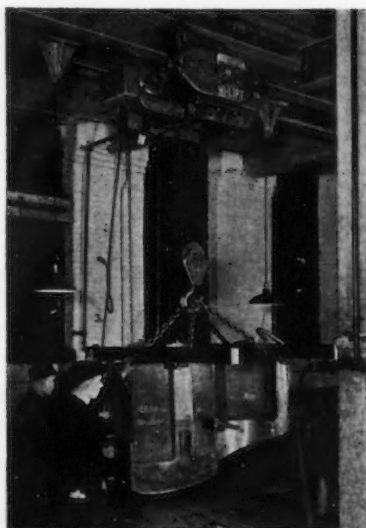
Hi-Lift Hoists are built in any capacity up to 16 tons—Floor or cab control.

Ask for bulletin I-104

**NORTHERN ENGINEERING
WORKS**

DETROIT

MICHIGAN



CRANES *Northern* **HOISTS**

FABRICATED STEEL

... Lettings of 8025 tons are about equal to those of a week ago . . . New projects in large volume at 30,155 tons . . . Plate awards call for 4240 tons.

NORTH ATLANTIC STATES AWARDS

- 2170 Tons, Brooklyn, Brooklyn High School for Home Making, to Bethlehem Steel Co., Bethlehem, Pa.
- 275 Tons, Jersey City, N. J., crane runway, Schiavone-Bonomo Corp., to Selbach-Meyer Co., West New York, N. J.
- 260 Tons, New York, reconstruction of East 175th and East 188th Street bridges, to American Bridge Co., Kenney & Finerty, Inc., general contractor.
- 200 Tons, Tewksbury, Mass., State infirmary, to Consolidated Iron Works, Malden, Mass.; Steed-Barber Corp., Boston, contractor.
- 140 Tons, Branford, Conn., bridge, to American Bridge Co., Pittsburgh; Marianni Construction Co., general contractor.
- 140 Tons, New York, maintenance building, North Beach Airport, to Schacht Steel Construction Co., New York.
- 100 Tons, New York, storage bin shaft No. 14, Delaware Aqueduct, contract 323, to American Bridge Co., Pittsburgh.

THE SOUTH

- 3150 Tons, Florence, Ala., bridge, proposal "C," to Virginia Bridge Co., Roanoke, Va.
- 510 Tons, Kingsport, Tenn., Eastman Corp. building, to Virginia Bridge Co., Roanoke, Va.

CENTRAL STATES

- 700 Tons, St. Louis, building for American Refrigerator Transit division of Missouri Pacific Railway, to Stupp Brothers Bridge & Iron Co., St. Louis.
- 130 Tons, Ozaukee County, Wis., underpass, to Milwaukee Bridge Co., Milwaukee.

WESTERN STATES

- 250 Tons, Matanuska, Alaska, two 125-ft. single track spans, to Duffin Iron Co., Chicago.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

- 1400 Tons, While Hill, Pa., boys' school; bids Aug. 19.
- 1300 Tons, New York, contract No. 4, basecule superstructure, Cross Bay Parkway.
- 750 Tons, Reading, Pa., post office; bids Aug. 26.
- 700 Tons, Westmoreland County, Pa., viaduct and grade elimination; bids Aug. 12.
- 400 Tons, Mount Gretna, Pa., prison; bids Aug. 19.
- 185 Tons, Indian Orchard, Mass., shop and extension, Chapman Valve & Mfg. Co.
- 175 Tons, New York, World's Fair building, Men's Quality Apparel Guild.
- 160 Tons, New York, Brick Presbyterian Church.
- 150 Tons, New York, exhibit building, World's Fair, Roumanian Government.

- 150 Tons, Ashley, Pa., Glen Alden Coal Co.
- 100 Tons, Sullivan County, Pa., highway bridge; bids July 29.

THE SOUTH

- 2000 Tons, Krotz Springs, La., railroad bridge extension.

983 Tons, State of Texas, bridges.

800 Tons, Estill County, Ky., State bridge over Kentucky River.

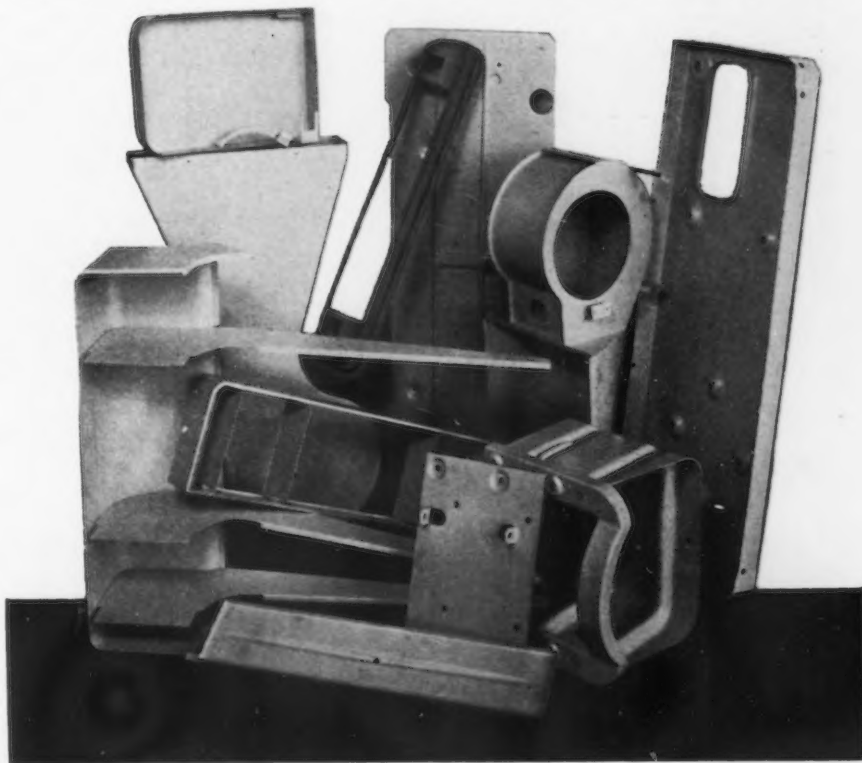
300 Tons, Louisville, Ky., railroad bridge.

125 Tons, Richwood, W. Va., State bridges 1494 and 1495.

CENTRAL STATES

14,085 Tons, St. Louis, cantilever and simple truss bridge across Mississippi River to East St. Louis, 8063 ft. long, cost \$5,-500,000. Of total, 4590 tons is silicon steel. Waddell & Hardesty, 132 Maiden Lane, New York, consulting engineers.

3500 Tons, Martins Ferry, Ohio, galvanizing and warehouse building, Wheeling Steel Corp.



STAMPINGS??

That's Our Business.

But that doesn't tell the whole story. Because *your* business is our business, York engineers see to it that your stamping requirements are filled accurately and promptly.

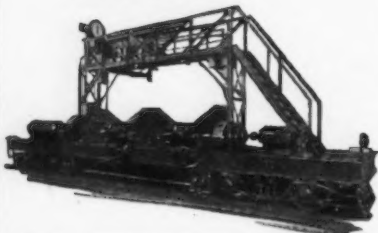
Our modern facilities for producing light or deep drawn stampings of every shape, size and description, have earned justifiable recognition in our field.

We respectfully solicit your inquiries.

YORK CORRUGATING CO.

York, Pa.

ATLAS CARS



Double Compartment Scale Car with Overhead Operator's Platform. Car provided with Orr Bin Gate Operating Mechanism.



20 Ton Capacity Double Compartment Scale Car for use with Orr type Bin Gates controlled from Operator's Station on Scale Car.

Atlas Products

Gas-Electric and Diesel-Electric Locomotives
Electric Transfer Cars for Blast Furnaces and Steel Plants
Stockhouse Scale Cars for Blast Furnaces
Concentrate and Calcine Cars for Copper Refineries
Automatic and Remote Controlled Electric Cars
Pushers, Levellers and Door Extractors
Coal Charging Lorries, Coke Guides and Clay Carriers
Atlas Patented Coke Quenching Cars for By-Product Coke Ovens
Atlas Patented Indicating and Recording Scales
Special Cars and Electrically Operated Cars for every conceivable purpose.

THE ATLAS CAR & MFG. CO.
Engineers - Manufacturers
1140 Ivanhoe Rd., Cleveland, O.

2200 Tons, Chicago, Ogden Avenue viaduct, American Bridge Co., low bidder.

1300 Tons, Des Moines, Iowa, Bankers Life Insurance Co. building.

1300 Tons, Cleveland, State elevated Cloverleaf highway intersection near Independence; Hunkin-Conkey Construction Co., Cleveland, low bidder on bridges.

1200 Tons, Canton, Ohio, Timken Technical High School; Gibbons-Grable Co., Canton, general contractor.

550 Tons, Savanna, Ill., 22 magazine buildings for Government; bids Aug. 1.

500 Tons, Chicago, car shop, Santa Fe Railroad.

215 Tons, State of Michigan, bridge.

WESTERN STATES

325 Tons, Renton, Wash., State undercrossing.

FABRICATED PLATES

AWARDS

1900 Tons, Ingleside, Tex., four oil tanks for Humble Pipe Line Co., to Chicago Bridge & Iron Works, Chicago.

750 Tons, Edmonds, Wash., tanks for Union Oil Co., to Steel Tank & Pipe Co. of Oregon, Portland.

550 Tons, Portland, Ore., tanks for Union Oil Co., to Steel Tank & Pipe Co. of Oregon, Portland.

396 Tons, Jamshedpur, India, gas washer, to William B. Pollock Co., Youngstown, through H. A. Brassert & Co., Chicago.

320 Tons, San Francisco, 82,000 bbl. oil tank for local interest, to Western Pipe & Steel Co., San Francisco.

190 Tons, Memphis, Tenn., pontoon pipe for U. S. Engineer Office, to Treadwell Construction Co., Midland, Pa.

134 Tons, Los Angeles, two oil tanks for local interests, to Western Pipe & Steel Co., San Francisco.

NEW PROJECTS

148 Tons, Los Angeles, copper bearing steel plates for United States Engineer; bids in.

SHEET PILING

AWARDS

400 Tons, Cleveland, H-piling for Main Street bridge piers, to Bethlehem Steel Co., Bethlehem, Pa.

300 Tons, Toledo, for Shell Oil Co. bulkhead, to Bethlehem Steel Co., Bethlehem, Pa.

NEW PROJECTS

150 Tons, Fairport, Ohio, H-piling and rails; Payne & Beymer, Painesville, Ohio, general contractor.

ALERTNESS

Points toward progress

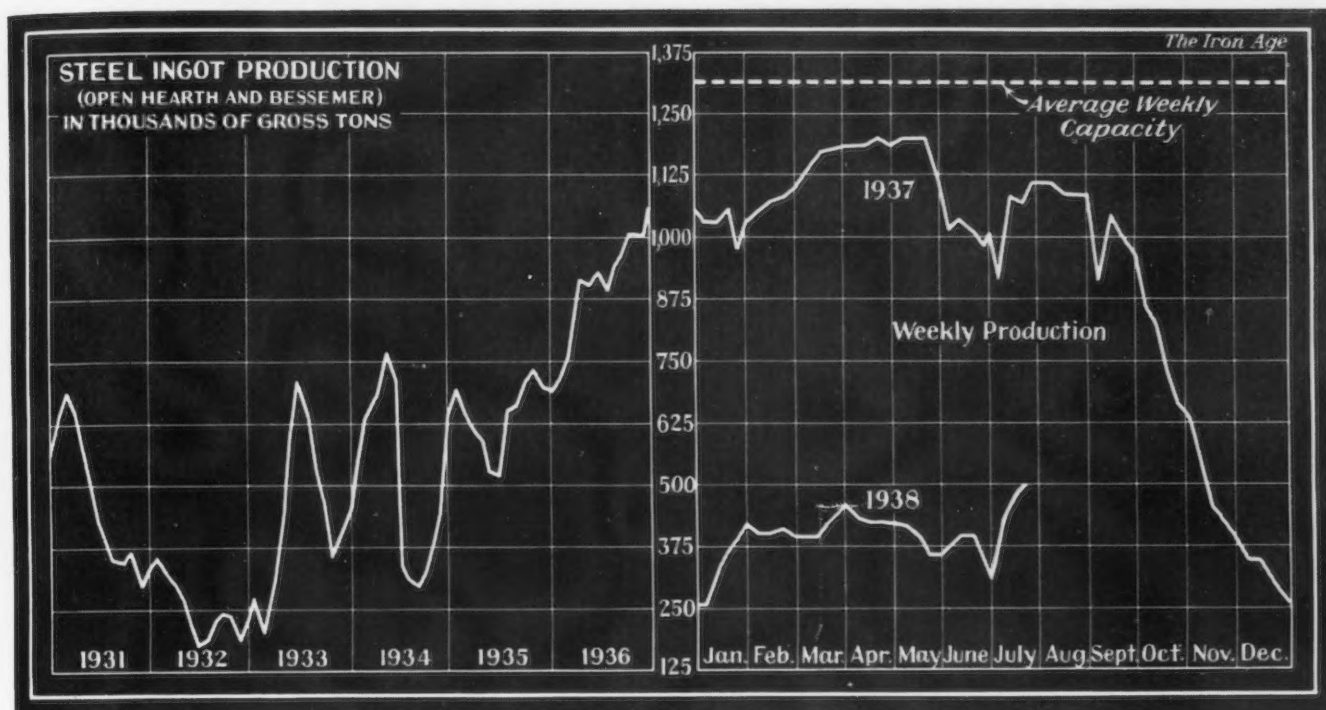
Utilize SUPERIOR Stainless Steel's unsurpassed record of performance to enhance the salability of your products.

» Let our Engineering Department demonstrate how SUPERIOR Stainless can help your production.

SUPERIOR STEEL CORPORATION
General Offices: Grant Bldg., Pittsburgh, Pa.
Works: Carnegie, Pa.

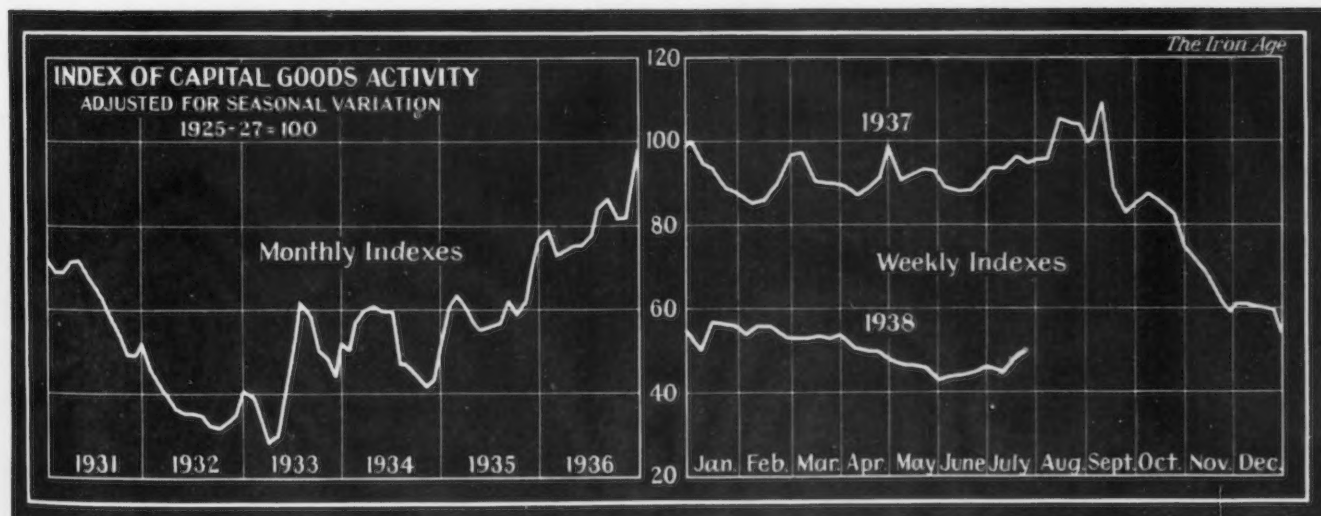
Superior **STAINLESS** *Steels*

Ingot Production Continues Rise to 37 Per Cent



| District | Ingots | Production, Per | Cent of Capacity | CURRENT WEEK... | Pitts- | Chicago | Valleys | Phila- | Cleve- | Wheel- | Buffalo | Detroit | Southern | S. Ohio | Western | St. Louis | East- | Aggre- |
|----------|--------|-----------------|------------------|------------------|--------|---------|---------|---------|--------|--------|---------|---------|----------|---------|---------|-----------|-------|--------|
| | | | | | burgh | | | delphia | land | ing | | | | River | | | ern | gate |
| | | | | | 28.0 | 38.0 | 31.0 | 27.0 | 19.0 | 65.0 | 38.0 | 48.0 | 39.5 | 42.0 | 30.0 | 26.0 | 50.0 | 37.0 |
| | | | | PREVIOUS WEEK... | 26.0 | 34.0 | 33.0 | 26.0 | 34.0 | 61.0 | 36.5 | 29.5 | 39.5 | 41.0 | 30.0 | 25.5 | 50.0 | 36.0 |

Capital Goods Activity Shows Rise for Second Week



INCREASED steel mill activity, a sharp rise in carloadings of forest products and an advance in Pittsburgh production and shipments more than offset the marked drop in automobile assemblies and pushed THE IRON AGE index of capital goods activity up slightly over a point. This is the second advance since the index dipped during the holiday week, but since the week ended June 4, the trend has been upward. At that time, the index stood at 43, low for the year, and has now advanced 6.3 points, or 14.7 per cent, to the present figure of 49.3. The high point of the year was 57.5, scored for the week ended Jan. 15.

| | Week Ended July 23 | Week Ended July 16 | Comparable Week | |
|--|--------------------|--------------------|-----------------|-------|
| | | | 1937 | 1929 |
| Steel ingot production ¹ | 50.3 | 45.8 | 117.0 | 139.7 |
| Automobile production ² | 34.4 | 42.5 | 97.3 | 134.7 |
| Construction contracts ³ | 59.1 | 59.6 | 72.1 | 123.4 |
| Forest products carloadings ⁴ | 53.8 | 47.5 | 80.6 | 125.4 |
| Production and shipments, Pittsburgh District ⁵ | 48.9 | 45.8* | 107.3 | 130.0 |
| Combined index..... | 49.3 | 48.2* | 95.3 | 129.5 |

Sources: 1. THE IRON AGE; 2. Ward's Automotive Reports; 3. Engineering News-Record; 4. Association of American Railroads; 5. University of Pittsburgh. *Revised.

...SUMMARY OF THE WEEK...

... Ingot rate slowly rises; scrap up \$1 at Pittsburgh.

° ° °

... Steel company warns of higher prices unless wages are reduced.

° ° °

... Differentials on tin mill products eliminated at Gary.

A RISE in steel ingot production to 37 per cent, a gain of one point from last week; an increase in sales over June, which at Pittsburgh has amounted to about 30 per cent, and an excited scrap market, which has boosted steel making grades \$1 at Pittsburgh and 50c. at Chicago and Philadelphia, bringing THE IRON AGE scrap composite price up to \$14.08, highest of the year thus far, are factors which seem to point to continued improvement.

The gain in operations from the June average rate has been about 30 per cent. A more moderate rise is to be expected from this point on, at least until automobile manufacturers come into the market more heavily for steel for new models, which will be about Aug. 15.

Some steel making districts have shown fairly sharp gains, notably Chicago, where the rate has risen four points to 38 per cent chiefly because of distribution of steel orders for Southern Railway cars. In the Wheeling-Weirton area a 65 per cent rate has been attained, the best in the country. Detroit, where operations have been at a low rate for many months, is up to 48 per cent from less than 30 per cent owing to resumption of some capacity by the Great Lakes Steel Corp. The starting up of the Ford steel plant on Aug. 8 will assure a further rise. Some districts have reduced open-hearth operations temporarily, having built up stocks of raw steel. A Lorain, Ohio, plant has shut down for a week's vacation.

Blast furnace operations are also on the increase. Two steel making furnaces were blown in at Chicago, and resumption of pig iron making may follow in other districts if scrap prices move up too far, as steel companies have ample stocks of ore, which presumably they desire to liquidate rather than add to their scrap costs. A merchant furnace in Alabama has also resumed, while others in that district may come into blast soon. Foundry melt is gaining moderately in some areas, with pig iron shipments slightly better. An intimation that pig iron prices may be raised \$1 a ton about Aug. 1 has not added materially to furnace bookings, as most

users have covered for the quarter's requirements on contract since the recent \$4 a ton reduction.

The most important development in the basing point situation is the elimination of the differentials at Gary over Pittsburgh on tin plate, black plate and special coated manufacturing ternes. Tin plate becomes \$5.25 per base box at both Pittsburgh and Gary, a reduction of \$2 a ton for Western users, while black plate has been placed on a 3.15c. a lb. base at both centers, a reduction of \$3 a ton at Pittsburgh and \$5 a ton at Gary. The adoption of the \$4.65 Pittsburgh price on manufacturing ternes at Gary brings that product down \$2 a ton for consumers in that area. The Granite City Steel Co., which has maintained mill base prices \$2 a ton over Gary, has made no announcement as to its prices.

On top of the reductions that have previously gone into effect, these lower prices emphasize the assertions of steel companies than an adjustment in wages or prices must come if they are to make any profits, even with a much higher operating rate. Yet no steel company seems to be ready to take the initiative in reducing wages, especially in view of the conferences in Washington this week under the auspices of the Public Contracts Board of the Department of Labor, which has given the steel companies another week in which to present additional wage data. The Inland Steel Co. warned the Public Contracts Board that "present wage rates must be subject to adjustment to meet existing conditions; otherwise prices must be increased in the near future if the industry is to avoid serious losses which will impair its economic position."

Miscellaneous buying, much of it in comparatively small lots, with a sprinkling of fairly large orders, accounts for the improvement that has occurred in sales. The month started out slowly, but has gained momentum, the past week having shown a decided improvement for many mills.

Government-financed projects are being rapidly announced, but steel requirements in many instances will not be rolled for some months. Structural steel lettings in the week were only 8000 tons, but new work totals more than 30,000 tons, including 14,000 tons for a bridge at St. Louis. Reinforcing steel awards were about 3000 tons, with new projects 8200 tons. Fabricated structural steel contracts closed in June gained nearly 43 per cent over those of May, and were the largest for any month this year.

While August will be a month of many partial shutdowns of automobile plants, some will get into production on new models before the end of the month. Increased sales of new and used cars will hasten output of 1939 models.

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous
Advances Over Past Week in Heavy Type, Declines in Italics

Rails and Semi-finished Steel

| Per Gross Ton: | July 26, 1938 | July 19, 1938 | June 28, 1938 | July 27, 1937 |
|-------------------------------|---------------|---------------|---------------|---------------|
| Rails, heavy, at mill | \$42.50 | \$42.50 | \$42.50 | \$42.50 |
| Light rails, Pittsburgh | 40.00 | 43.00 | 43.00 | 43.00 |
| Rerolling billets, Pittsburgh | 34.00 | 34.00 | 34.00 | 37.00 |
| Sheet bars, Pittsburgh | 34.00 | 34.00 | 34.00 | 37.00 |
| Slabs, Pittsburgh | 34.00 | 34.00 | 34.00 | 37.00 |
| Forging billets, Pittsburgh | 40.00 | 40.00 | 40.00 | 43.00 |
| Wire rods, Nos. 4 and 5, P'gh | 43.00 | 43.00 | 43.00 | 47.00 |
| | Cents | Cents | Cents | Cents |
| Skelp, grvd. steel, P'gh, lb. | 1.90 | 1.90 | 1.90 | 2.10 |

Pig Iron

| Per Gross Ton: | July 26, 1938 | July 19, 1938 | June 28, 1938 | July 27, 1937 |
|-----------------------------|---------------|---------------|---------------|---------------|
| No. 2 fdy., Philadelphia | \$21.84 | \$21.84 | \$25.84 | \$25.76 |
| No. 2, Valley furnace | 20.00 | 20.00 | 20.00 | 24.00 |
| No. 2, Southern Cin'ti | 20.06 | 20.06 | 20.06 | 23.69 |
| No. 2, Birmingham | 16.38 | 16.38 | 16.38 | 20.38 |
| No. 2, foundry, Chicago* | 20.00 | 20.00 | 20.00 | 24.00 |
| Basic, del'd eastern Pa. | 21.34 | 21.34 | 25.34 | 25.26 |
| Basic, Valley furnace | 19.50 | 19.50 | 19.50 | 23.50 |
| Malleable, Chicago* | 20.00 | 20.00 | 20.00 | 24.00 |
| Malleable, Valley | 20.00 | 20.00 | 20.00 | 24.00 |
| L. S. charcoal, Chicago | 28.34 | 28.34 | 30.34 | 30.04 |
| Ferromanganese, seab'd car- | | | | |
| lots | 92.50 | 92.50 | 102.50 | 102.50 |

*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Finished Steel

| Per Lb.: | Cents | Cents | Cents | Cents |
|--|--------|--------|--------|--------|
| Bars, Pittsburgh | 2.25 | 2.25 | 2.25 | 2.45 |
| Bars, Chicago | 2.25 | 2.25 | 2.25 | 2.50 |
| Bars, Cleveland | 2.25 | 2.25 | 2.30 | 2.50 |
| Bars, New York | 2.59 | 2.59 | 2.66 | 2.78 |
| Plates, Pittsburgh | 2.10 | 2.10 | 2.10 | 2.25 |
| Plates, Chicago | 2.10 | 2.10 | 2.10 | 2.30 |
| Plates, New York | 2.29 | 2.29 | 2.40 | 2.53 |
| Structural shapes, P'gh | 2.10 | 2.10 | 2.10 | 2.25 |
| Structural shapes, Chicago | 2.10 | 2.10 | 2.10 | 2.30 |
| Structural shapes, New York | 2.27 | 2.27 | 2.27 | 2.5025 |
| Cold-finished bars, P'h | 2.70 | 2.70 | 2.90 | 2.90 |
| Hot-rolled strips, P'gh | 2.15 | 2.15 | 2.15 | 2.40 |
| Cold-rolled strips, P'gh | 2.95 | 2.95 | 2.95 | 3.20 |
| Sheets, galv., No. 24, P'gh | 3.50 | 3.50 | 3.50 | 3.80 |
| Sheets, galv., No. 24, Gary | 3.50 | 3.50 | 3.50 | 3.90 |
| Hot-rolled sheets, P'gh | 2.15 | 2.15 | 2.15 | |
| Hot-rolled sheets, Gary | 2.15 | 2.15 | 2.15 | |
| Cold-rolled sheets, P'gh | 3.20 | 3.20 | 3.20 | |
| Cold-rolled sheets, Gary | 3.20 | 3.20 | 3.20 | |
| Wire nails, Pittsburgh | 2.45 | 2.45 | 2.45 | 2.75 |
| Wire nails, Chicago dist. mill | 2.45 | 2.45 | 2.45 | 2.80 |
| Plain wire, Pittsburgh | 2.60 | 2.60 | 2.60 | 2.90 |
| Plain wire, Chicago dist. mill | 2.60 | 2.60 | 2.60 | 2.95 |
| Barbed wire, galv., P'gh | 3.20 | 3.20 | 3.20 | 3.40 |
| Barbed wire, galv., Chicago dist. mill | 3.20 | 3.20 | 3.20 | 3.45 |
| Tin plate, 100-lb. box, Pitts- | | | | |
| burgh and Gary | \$5.35 | \$5.35 | \$5.35 | \$5.35 |

On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Scrap

| Per Gross Ton: | | | | |
|------------------------------|---------|---------|---------|---------|
| Heavy melting steel, P'gh | \$15.25 | \$14.25 | \$12.75 | \$20.75 |
| Heavy melting steel, Phila. | 14.25 | 13.75 | 12.75 | 19.75 |
| Heavy melting steel, Ch'go | 12.75 | 12.25 | 10.75 | 19.75 |
| Carwheels, Chicago | 14.25 | 13.75 | 12.50 | 19.75 |
| Carwheels, Philadelphia | 15.75 | 15.75 | 14.75 | 19.75 |
| No. 1 cast, Pittsburgh | 14.75 | 14.75 | 14.25 | 19.75 |
| No. 1 cast, Philadelphia | 16.25 | 15.75 | 15.25 | 20.75 |
| No. 1 cast, Ch'go (net ton) | 12.75 | 12.25 | 10.75 | 16.75 |
| No. 1 RR. wrot., Phila. | 15.25 | 15.25 | 15.25 | 19.75 |
| No. 1 RR. wrot., Ch'go (net) | 11.00 | 10.50 | 8.75 | 19.75 |

Coke, Connellsville

| Per Net Ton at Oven: | | | | |
|----------------------|--------|--------|--------|--------|
| Furnace coke, prompt | \$3.75 | \$3.75 | \$3.75 | \$4.35 |
| Foundry coke, prompt | 4.75 | 4.75 | 4.75 | 5.00 |

Metals

| Per Lb. to Large Buyers: | Cents | Cents | Cents | Cents |
|----------------------------|--------|-------|-------|--------|
| Electrolytic copper, Conn. | 10.00 | 9.75 | 9.00 | 14.00 |
| Lake copper, New York | 10.125 | 9.875 | 9.125 | 14.12½ |
| Tin (Straits), New York | 43.75 | 43.35 | 42.25 | 59.125 |
| Zinc, East St. Louis | 4.75 | 4.75 | 4.50 | 7.00 |
| Zinc, New York | 5.14 | 5.14 | 4.89 | 7.35 |
| Lead, St. Louis | 4.75 | 4.75 | 4.35 | 5.85 |
| Lead, New York | 4.90 | 4.90 | 4.50 | 6.00 |
| Antimony (Asiatic), N. Y. | 14.00 | 14.00 | 14.00 | 15.25 |

The Iron Age Composite Prices

Finished Steel

July 26, 1938
One week ago
One month ago
One year ago

2.300c. a Lb.
2.300c.
2.350c.
2.512c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products represent 85 per cent of the United States output.

| | High | Low | |
|------|------------------|------------------|--|
| 1938 | 2.512c., May 17 | 2.300c., July 6 | |
| 1937 | 2.512c., Mar. 9 | 2.249c., Jan. 4 | |
| 1936 | 2.249c., Dec. 28 | 2.016c., Mar. 10 | |
| 1935 | 2.062c., Oct. 1 | 2.056c., Jan. 8 | |
| 1934 | 2.118c., Apr. 24 | 1.945c., Jan. 2 | |
| 1933 | 1.953c., Oct. 3 | 1.792c., May 2 | |
| 1932 | 1.915c., Sept. 6 | 1.870c., Mar. 15 | |
| 1931 | 1.981c., Jan. 13 | 1.883c., Dec. 29 | |
| 1930 | 2.192c., Jan. 7 | 1.962c., Dec. 9 | |
| 1929 | 2.223c., Apr. 2 | 2.192c., Oct. 29 | |
| 1928 | 2.192c., Dec. 11 | 2.142c., July 10 | |
| 1927 | 2.402c., Jan. 4 | 2.212c., Nov. 1 | |

Pig Iron

\$19.61 a Gross Ton
19.61
21.91
23.25

Based on average basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Southern Iron at Cincinnati.

| | High | Low | |
|----------------|-----------------|-----|--|
| 23.25, June 21 | \$19.61, July 6 | | |
| 23.25, Mar. 9 | 20.25, Feb. 16 | | |
| 19.73, Nov. 24 | 18.73, Aug. 11 | | |
| 18.84, Nov. 5 | 17.83, May 14 | | |
| 17.90, May 1 | 16.90, Jan. 27 | | |
| 16.90, Dec. 5 | 13.56, Jan. 3 | | |
| 14.81, Jan. 5 | 13.56, Dec. 6 | | |
| 15.90, Jan. 6 | 14.79, Dec. 15 | | |
| 18.21, Jan. 7 | 15.90, Dec. 16 | | |
| 18.71, May 14 | 18.21, Dec. 17 | | |
| 18.59, Nov. 27 | 17.04, July 24 | | |
| 19.71, Jan. 4 | 17.54, Nov. 1 | | |

Steel Scrap

\$14.08 a Gross Ton
13.42
12.08
20.08

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

| | High | Low | |
|------------------|-----------------|-----|--|
| \$14.08, July 26 | \$11.00, June 7 | | |
| 21.92, Mar. 30 | 12.92, Nov. 16 | | |
| 17.75, Dec. 21 | 12.67, June 9 | | |
| 13.42, Dec. 10 | 10.33, Apr. 23 | | |
| 13.00, Mar. 13 | 9.50, Sept. 25 | | |
| 12.25, Aug. 8 | 6.75, Jan. 3 | | |
| 8.50, Jan. 12 | 6.43, July 5 | | |
| 11.33, Jan. 6 | 8.50, Dec. 29 | | |
| 15.00, Feb. 18 | 11.25, Dec. 9 | | |
| 17.58, Jan. 29 | 14.08, Dec. 3 | | |
| 16.50, Dec. 31 | 13.08, July 2 | | |
| 15.25, Jan. 17 | 13.08, Nov. 22 | | |

...PITTSBURGH...

... Steel ingot operations at 28% in Pittsburgh, 65% in Wheeling-Weirton area ... Sales 30% over June ... Tin plate differential at Gary eliminated and black plate is reduced \$3 and \$5 to single base ... Steel scrap up \$1.

PITTSBURGH, July 26. — Ingot production in this district for the current week is estimated at 28 per cent of capacity, a gain of two points over the preceding week and the highest rate reached in 10 weeks. The Wheeling-Weirton rate this week is 65 per cent, up four points.

The rising operating schedules have been reflected in the scrap market, where an increase of \$1 a ton on No. 1 heavy melting steel makes this grade quotable now at \$15 to \$15.50.

New business booked in the past week is slightly greater than in the preceding week, with no one industry responsible for the gain. In the present month to date, sales are about 30 per cent ahead of the comparable period in June.

Prices of tin mill products at Gary have been brought down to the Pittsburgh level. Black plate, 29 gage and lighter, has been reduced \$3 a ton at Pittsburgh and \$5 at Gary, making this product now 3.15c. a lb. at both points.

Pig Iron

Shipments of both steel making iron and foundry iron are showing a slight but steady improvement, reflecting recent increases in foundry melting activities and ingot production. Shipments in the present month are about 15 per cent ahead of the like period in June, with the bulk of the gain having been recorded in the past two weeks.

Semi-Finished Steel

Better operating schedules in non-integrated mills have been responsible for a small gain in the amount of new business booked in the past week. Sales so far this month are about 10

per cent ahead of the like period in June.

Bars, Plates and Shapes

Although in number this week's structural awards and inquiries are slightly less than in the previous week, it is noteworthy that a larger share of the week's new inquiries are made up of private projects. There has been some isolated buying of plates by railroads for repairs, but the tonnages involved are insignificant. Some small shipbuilding tonnages for the recently placed maritime vessels have also been booked lately. Hot rolled bar sales in the past week were somewhat improved over the previous week, due chiefly to jobber buying.

Cold Finished Bars

Demand from miscellaneous sources continues to show marked improvement. On a daily basis orders placed in the current month to date are running about 25 per cent ahead of June. Some buyers are asking for protection against rises in prices but sellers are endeavoring to avoid committing themselves as to the future, outside of assuring that adequate notice will be given in the event of a price revision.

Reinforcing Bars

Awards placed in the past week, while not as heavy from a tonnage viewpoint, are fully as numerous as the previous week. Publicly financed projects continue to account for the bulk of current construction work. Prices on most jobs are holding fairly well to the 2.05c., Pittsburgh, base, but on unusually large projects there have been some variations from this price.

Tubular Goods

Slightly better releases of oil-country goods in the past week brought the first improvement in the sales of this product in several months. Boiler tube sales have also shown a slight upturn. Despite this improvement, sales in the present month are only about two-thirds of the June total.

Sheets and Strip

Sheet demand from miscellaneous sources in the past week indicated a leveling off process after several weeks of progressively increasing sales volume. Until automobile tonnages are released in the latter part of August, sellers anticipate little change in the present scale of demand. Notwithstanding this leveling off in the past week, sheet sales in July will be about double those in June.

....ST. LOUIS....

... Steel buying slow but pig iron melt is increasing.

ST. LOUIS, July 26.—The first sizable award of structural shapes for a local project in some time was made to Stupp Brothers Bridge & Iron Co., 700 tons for a building for the American Refrigerator Transit Co., division of the Missouri Pacific Railway. Hallett Construction Co., Crosby, Minn., is low bidder on the general contract for the Government dam at Wappapello, Mo., requiring 1000 tons of reinforcing bars.

Business generally with fabricators is extremely dull. Labor contracts expired July 8, but work is proceeding under the old agreement with a formal renewal.

Demand for sheets and other finished steel products is very light, and consumers seem disinclined to do other than buy for immediate needs.

Buying of pig iron, which was accelerated upon a heavy scale following the reduction of \$4 a ton, has about subsided. The melt is increasing, with the improvement being noted in the steel mills, the malleable foundries and the stove plants.

Weekly Booking of Construction Steel

| | Week-Ended | | | | Year to Date | |
|--|---------------|---------------|---------------|---------------|--------------|---------|
| | July 26, 1938 | July 19, 1938 | June 28, 1938 | July 27, 1937 | 1938 | 1937 |
| Fabricated structural steel awards | 8,025 | 7,900 | 11,625 | 22,300 | 381,150 | 714,340 |
| Fabricated plate awards | 4,240 | 3,485 | 495 | 1,310 | 78,775 | 79,670 |
| Steel sheet piling awards | 0 | 790 | 170 | 0 | 29,285 | 30,520 |
| Reinforcing bar awards | 2,800 | 19,910 | 11,000 | 7,555 | 158,565 | 147,070 |
| Total Lettings of Construction Steel.. | 15,065 | 32,085 | 23,290 | 31,165 | 647,775 | 971,600 |

... CHICAGO ...

... Gary differential on tin plate over Pittsburgh eliminated ... Black plate lowered \$5 a ton ... Steel operations gain ... Scrap higher.

CHICAGO, June 26.—A rise of four points to 38 per cent of capacity, three of the five major producers contributing, was brought about largely by the release here of a considerable portion of the Southern Railway's car steel. Two steel-making furnaces were blown in last week, making a total of 10 in blast.

Optimism in many sectors is running high, although tangible support for such feeling is difficult to find. Miscellaneous buying is an important factor in the increased operating rate, but commitments still are not being made far beyond current needs. The expectation of automobile buying around Aug. 15 leads producers to predict a continuation of present operating schedules for some time.

It is becoming increasingly evident that some adjustment in prices or wages must be made if profits are to be realized. One producer here states that operations will have to be close to full capacity before black figures can be shown under present conditions.

A resumption of activity in some farm equipment plants is anticipated by the end of the month.

Scrap prices again are ascending, heavy melting being quoted at \$12.50 to \$13.

The old differential between Gary and Pittsburgh on tin mill products has been removed and tin mill black reduced in price, although producers have made no public announcement. The new schedule lists tin plate at \$5.35 at both points, down 10c. at Gary; tin mill black at \$3.15, down 15c. at Pittsburgh, and 25c. at Gary, and special coated manufacturing ternes at \$4.65, down 10c. at Gary.

Structural Shapes and Reinforcing Steel

The American Bridge Co. is low bidder on the largest current project here, the viaduct at Ogden Avenue. Few other sizable jobs are in process of development, most of the tonnage being less than 100 tons, with private work continuing at a minimum.

Plates, Sheets and Strip

Flat rolled projects are benefiting greatly from the Southern Railway car

orders being placed here, but little other railroad demand is in prospect until fall at the earliest. Long ternes and enameling sheets are being taken by a new maker of small heaters who is said to have sold 5000 from photographs. Air conditioning and washing machine manufacturers are active consumers. Studebaker's sheet stock is reputed to be still large. Few signs of automobile buying have yet been seen. Some mills report recent releases on sheets and strip held for a long period.

Bars

Several fairly substantial orders have been received from motor car builders, while the tractor industry continues a contributor to demand. Farm equipment interest is low and will continue so until August when most of the plants now down again will be operating.

... CINCINNATI ...

... Demand for sheets shows a gain ... ingot output off slightly.

CINCINNATI, July 26.—Furnace interests report several substantial contracts for Northern iron estimated at from 1500 to 2000 tons each. Southern producers, while receiving similar attention as to contracts, are receiving smaller orders, averaging, according to furnace representatives, from 100 to 300 tons each. It is estimated that since the price change, contracting in the area has totaled about 25,000 to 30,000 tons. Specifications against these contracts, however, are meager. Shipments are slightly less than last month. Foundries are operating at about 25 per cent of capacity, with machine tool melters still most active.

Sheet steel demand continues to gain, current business being at a new level above the 35 per cent rate of a week ago. Opinion as to the cause is divided. Automobile demand is still only a small part of total business, but mill interests report car manufactur-

Wire and Wire Products

Seasonally this time of year is slow for wire sellers, and this summer is no exception. Interest in merchant wire products is lessening gradually, and activity in industrial lines is light. All signs point to an upturn in early fall.

Pig Iron

Two blast furnaces, both on steel making iron, were blown in this week making the district total 10. Shipments of merchant iron in some cases are running 40 to 50 per cent ahead of last month, but foundry coke activity, which indicates the rate of melt, is no higher.

Tin Plate

Now being quoted to the trade but not officially announced is the elimination of the 10c. Gary differential over Pittsburgh on tin plate and special coated manufacturing ternes, making the Pittsburgh-Gary price on the former \$5.35 and \$4.65 on the latter. Tin mill black plate now is \$3.15 at both points, a reduction at Gary of 25c. and 15c. at Pittsburgh. Further demand is expected because of the fine corn crop now in prospect and the probability of a bumper tomato yield.

ers to be more active in ordering than a week ago.

Steel ingot production dropped a few points this week to about 38 per cent. One interest has cooled all open hearths while another has added two, bringing the total to 14 out of 34.

... BOSTON ...

... Some improvement in New England pig iron melt.

BOSTON, July 26.—Because numerous buyers went on vacation, a solid week of heavy rains, and little or no pickup in orders for castings, New England foundries bought comparatively little iron the past week.

Some improvement in the melt is occurring, and sentiment among foundrymen generally is that better business will develop sooner or later, and that when it does come it will be good.

Textile and leather industries continue to slowly increase operations. Of more importance from a metal standpoint is the fact that electric appliance manufacturers are obtaining sizable orders for such incidentals as toasters, irons, refrigerators, etc.

U.S. Agency Holds Up Ruling On SWOC

Demand Steel Wage Cut Be Blocked

WASHINGTON. — John L. Lewis' SWOC this week was checked momentarily in its drive to postpone steel wage cuts indefinitely through action of the Labor Department's Public Contracts Board.

The SWOC sought to have the board freeze steel wages immediately for mills bidding on Government contracts, thus preventing a general wage reduction and in some areas actually increasing the pay rates.

Fighting for time to get its side of the wage controversy before the board members, following an earlier statement by Board Chairman Thomas Holland that findings "would be announced in a few days," the steel industry was given one additional week for filing of its briefs and comments.

Among those urging the board to allow more time before a decision was reached was United States Steel Corp. whose vice-president, William Beye told the board members that "any hearing and investigation to determine prevailing minimum wages in the iron and steel industry should embrace all groups of iron and steel manufacturers included in the iron and steel industry and should not be limited to any one of such group or groups.

"The present hearing," said Mr. Beye in a prepared statement which listed wage rates paid by U. S. Steel subsidiaries in various districts, "should be continued to such appropriate time as will permit notice to be given to all interested parties to appear and present their data."

Murray "Steam Roller" Seen

Other companies likewise sought to prevent a quick decision on the SWOC's surprise move to prevent wage reductions. Rumors were heard in Washington that Philip Murray, SWOC head, was seeking to "steam roller" the hearing. Mr. Murray not only proposed specific minimum wage rates under authority of the Walsh-Healey Act, to be applied to all companies doing \$10,000 or more of business with the Government yearly, but served notice that SWOC will attempt to eliminate wage differentials between various districts through collective bargaining. Murray urged that the steel industry be divided into three wage areas, with 62.5c. an hour, the minimum in the Eastern region, 60c.

in the Western region, and 45c. in the South.

The SWOC leader charged that Bethlehem Steel Corp. and Republic Steel Corp. "by undercutting the prevailing rate, have endangered the wage rates of thousands of workers and have, unfairly and unjustifiably, benefited through unfair competition with other steel companies." Both companies, with some other large independents, have refused to sign SWOC union contracts. Bethlehem, Mr. Murray claimed, pays 6c. an hour less than other steel producers in the Eastern region. (Actually Bethlehem pays the standard Eastern rate based on Allentown, Pa., wages.)

Conceding that Republic maintains the same wage rate in the North as competing companies, Mr. Murray declared that the company "nevertheless was undercutting its competitors' wage rates in the South." (Republic pays the same rate, 40c. an hour, as other independent companies.)

Small Companies Protest

Robert W. Wolcott, president of Lukens Steel Co., Coatesville, Pa., said that it would be necessary for the company to curtail costs because of the necessity of its recent dropping of the \$2 differential in prices on plates at Coatesville and the reduction of \$5 a ton in price. He said that it was necessary to drop the \$2 differential in order to protect customers. The Lukens company, he declared, in June had 2054 on the payroll of which 1640 wage earners were paid 57.5c. an hour or over, which, as pointed out, is the standard rate in the Eastern district.

Wage Data Provided

The Sharon Steel Corp., Sharon, Pa., said that of its 1786 wage earners only 10.98 per cent received the common labor rate of 62.5c., other wage earners receiving higher wages. Jones & Laughlin Steel Corp., Pittsburgh, said that the number of its employees on July 1-15 totaled 16,090 with 9247 employed at the Aliquippa works and 6843 employed at the Pittsburgh works. Of this total it was stated that only 1886 received the 62.5c. hourly rate and only 208 less than that while the remainder received higher wages. Woodward Iron Co., Woodward, Ala., blast furnace oper-

ator, in a letter told the board that it has 572 employees and pays for common labor at rate of 40c. an hour.

Morrow Protests

Hugh Morrow, president, Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., expressed fear that the entire steel wage structure in the South would be disrupted. He pointed out that when the common labor rate is considered it should follow that there will be increases in each of the occupations above. This view was based on the fact that in the South there are fixed differentials between common and higher paid labor. Mr. Morrow explained that Mr. Murray had asked for a southern rate of 45c. an hour, or 5c. more than paid by his company, the Woodward Iron Co., and the Republic Steel Corp. in the Alabama district. The Tennessee Coal, Iron & Railroad Co., he said, pays 45c.

R. M. O'Hara, counsel for the Cohoes Rolling Mill Co., Cohoes, N. Y., a non-integrated pipe maker, said that any minimum rate without differentials would be disastrous to his and other small companies. John E. Laughlin, counsel for the National Steel Corp., Great Lakes Steel Corp., Weirton Steel Co., and Hanna Furnace Co., saying he had not been given time to prepare a detailed statement, submitted figures on wages paid by the companies he represents, up to the standard of those paid by competitors, and declared that later material as to definitions might be filed with the board.

Corporation Lists Rates

United States Steel Corp. filed with the board the following wage rates paid by its subsidiaries:

American Steel & Wire Co.: Cleveland, Pittsburgh, Worcester, Mass., 62.5c.; Chicago, 60c.; Duluth, Minn., 60c.

Carnegie-Illinois Steel Corp.: Pittsburgh and Chicago, 62.5c.; Johnstown, Pa., 58.5c.

Columbia Steel Co.: Pittsburg, Cal., and Ironton, Utah, 60c.; Los Angeles, 58c.; San Francisco, 65c.

National Tube Co.: Pittsburgh, Cleveland, Youngstown and Chicago, 62.5c.

Tennessee Coal, Iron & Railroad: Birmingham, 45c.

... CLEVELAND ...

... Ingot output leveling off temporarily, but fall rise is expected . . . Industry awaits automobile buying . . . Miscellaneous orders supporting present operations.

CLEVELAND, July 26.—Ingot output shows signs of leveling off temporarily in both districts.

The rate for Youngstown and nearby cities is down two points to 31 per cent. Due to the one-week vacation shut down at Lorain, the average for the Cleveland-Lorain district is this week down 15 points to 19 per cent.

While gains in production are confidently expected for the fall, not much change is expected during the next few weeks, until automotive specifications become heavier. Miscellaneous buying has been providing the stimulus in recent weeks, but at present is not in sufficient volume to keep pushing operations up.

Despite the low state of consumer inventories, there has been little or no stocking or speculative buying of finished steel since the lowering of base prices June 24.

Effective immediately, Gary and Pittsburgh prices on tin plate are equalized, standard cokes being \$5.35; tin mill black, 29 gage and lighter, 3.15c., down \$3 a ton, and special coated manufacturing ternes, 4.65c.

After a flurry of third quarter specifications, pig iron buying is beginning to taper, but July shipments are gaining over June.

Pig Iron

Shipments for July are beginning to show a fair-sized increase over June. The volume of buying is slower, many of the principal melters now being covered for their third quarter requirements. Automotive buying is expected to become stronger in a few weeks.

Warehouse Business

July to date has proved slightly better in warehouse volume here. Quantity extras were revised June 19 on hot rolled sheets, hot rolled bars, structurals and plates, following the action in other cities. Base is now 400 lb. to 1 ton; 1 ton to 5 tons takes 20c. off base; 5 tons to 20 tons 30c. off

base; less than 400 lb. takes 50c. over base.

Bolts, Nuts and Rivets

Markets for these products show a little irregular improvement, pending the expected receipt of automotive specifications in a few weeks. Shipbuilding and construction offer hopes for rivet makers. Republic Steel Corp.'s installation of bolt and nut facilities at Gadsden, Ala., has provided one of the chief market topics of interest.

Sheets and Strip

Incoming business remains spotty. Automotive buying of sheets consists for the most part of material for try-outs. Specifications from a few district parts makers for strip have been fair recently.

Bars, Plates and Shapes

Awards and inquiries for fabricated steel and reinforcing bars are active in northern Ohio. Piling awards in this vicinity include two jobs totaling 700 tons this week, an Akron sewer job involving 400 tons of reinforcing bars has been awarded, and a number of large public projects are progressing rapidly toward the award stage.

Wire and Wire Products

Demand has tapered slightly since the first of the month, only mild stimulus resulting from the decrease in prices and very little evidence of stocking being apparent. Automotive demand for rods and wire is counted upon to provide an uplift in a few weeks.

Tubular Goods

The oil country market continues somewhat unsettled, due to the recent changes in prices and classifications. While preparations are being made by some producers to lease warehouse facilities at Houston, there is a possibility that Memphis is not altogether out as a distribution point, since some action may be initiated by railroads. Meanwhile, some drillers previously

using odd sizes of casing are preparing to revise their requirements to take advantage of the new quantity items. Some producers have begun quoting "on application" their prices for their products comparable to extreme line casing. Reflection of this is expected in thin wall, high tensile coupling casing. In this vicinity Standard Oil of Ohio continues to supply most of the momentum for line pipe.

..BIRMINGHAM..

... Woodward blast furnace blown in . . . Other stacks may resume.

BIRMINGHAM, July 26.—Industrial operations are beginning to climb upward from the low point of early summer. On Thursday, July 21, Woodward Iron Co. blew in its No. 2 stack and is now operating two blast furnaces. This increased the district's total to six. It is likely that one or two others will resume operations at an early date. Tennessee Coal, Iron & Railroad Co. is expected to reopen its ore mines on or about Aug. 25. All but one of its mines were shut down around June 5 and the last was closed last week. Recently, Woodward Iron Co. reopened its Dolomite coal mine.

Steel requirements for 2000 box cars were placed with the Tennessee company last week by the Pullman-Standard Car Mfg. Co. This order amounted to around 20,000 tons.

Pullman-Standard Car Mfg. Co. is to participate in a Brazilian car order but it is not likely that any of the cars will be built in the local plant, so local officials state.

A fair run of steel orders continues. Bookings last week were heavy on account of the Pullman-Standard car order. The pig iron situation is also improving slowly, from the standpoint of shipments. New tonnage has been encouraging.

Last week 11 open hearths were operated, and the schedule for this week is the same.

J. & L. Quarterly Loss Reported at \$1,654,303

JONES & LAUGHLIN STEEL CORP., for the quarter ended June 30, 1938, reports a net loss after interest charges, depreciation and depletion, and all operating expenses of \$1,654,303. For the six months ended June 30, the net loss was \$2,924,028.

Wages Must Come Down or Prices Must Go Up, Says Inland Steel

WASHINGTON.—The Inland Steel Co., through its counsel, Ernest S. Ballard, warned the Public Contracts Board of the Department of Labor on Tuesday that steel wages must come down or prices must go up.

"It is obvious," said Mr. Ballard,

"in the face of recently reduced prices and certain other costs of distribution which have been assumed by members of the industry that present wage rates must be subject to adjustment to meet existing conditions. Otherwise, prices must be

increased in the near future if the industry is to avoid serious losses which will impair its economic position."

Second Quarter Reports Show Drop in Earnings

COMPANIES in steel and allied industries this week reported second quarter earnings much lower than for the like period of 1937. A comparison of profit (losses indicated by *) in the second periods of this and last year for some of the companies reporting follows:

| | 1938 | 1937 |
|-------------------------------------|------------|-----------|
| Sharon Steel Corp. | \$192,006* | \$696,076 |
| Continental Steel Corp. | 156,091 | 255,175 |
| Acme Steel Co. | 62,170 | 669,441 |
| Sloss-Sheffield S. & I. Co. (6 mo.) | 344,437 | 571,987 |
| Otis Steel Co. | 520,101* | 1,040,424 |
| A. M. Byers Co. | 81,916 | 22,012 |
| Amer. Brake Shoe & Foundry Co. | 244,728 | 1,080,239 |
| Interlake Iron Co. | 294,587* | 572,834 |
| Wickwire Spencer Steel Co. | 117,922* | 600,694 |
| Allis-Chalmers Mfg. Co. | 1,475,410 | 2,636,850 |
| Natl. Malleable | 442,580* | 746,279 |
| Ex-Cell-O Corp. | 26,186 | 175,211 |
| Cliffs Corp. | 36,790 | 202,551 |
| Truscon Steel Co. | 204,130* | 274,442 |
| Master Electric Co. | 86,990 | 193,816 |
| Gardner-Denver Co. (6 mo.) | 124,181 | 699,873 |
| A. M. Castle & Co. | 294,587* | 28,266 |
| Caterpillar Tractor Co. | 444,515* | 1,209,650 |



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U. S. Steel Quarterly Loss Is \$5,010,426

UNITED STATES STEEL CORP. reports for the second quarter of 1938 a net loss of \$5,010,426 after all charges, compared with a loss of \$1,292,151 in the first three months of this year.

Announcing the regular \$1.75 quarterly dividend on preferred stock, E. R. Stettinius, Jr., U. S. Steel chairman, said "there was a further recession in the demand for steel products during the second quarter of 1938 in comparison with that for the first quarter. Since the middle of July, however, there has been an improving demand for steel products as evidenced both by incoming orders received and the increased production of the steel industry."

U. S. Steel reports 1,445,110 tons of finished steel products shipped in the second quarter and 3,010,354 tons shipped in the first half of 1938. Its payroll, with 206,357 employees, totaled \$135,252,626 on June 30, against 257,168 employees paid \$229,676,854 a year earlier.

.. PHILADELPHIA ..

... Eastern Pennsylvania rate up one point to 27% ...
Consumer buying support still fails to show much under-
lying strength ... Pig iron sellers talk of a price rise.

PHILADELPHIA, July 26.—The more diversified mills in this area are experiencing a modest acceleration in orders, the average July bookings being probably in the neighborhood of 10 per cent above those of June. However, the smaller specialized producers report that orders this month are if anything running behind those of last month in volume, the monetary return, of course, being considerably less. Whereas all producers view the remainder of the year with an optimistic eye, the pronounced failure of the major outlets in this territory to figure prominently in day-to-day business naturally gives rise to occasional flashes of skepticism regarding the underlying vigor of the current upward surge in industrial indices and stock market values.

With backlogs practically unchanged from a week ago, steel makers perceive no incentive to put on additional open hearths to build up semi-finished inventories. This has resulted in only a one-point upward movement in the aggregate district operating rate, the activity for the current week averaging 27 per cent. There is yet little indication that any merchant blast furnace here will blow in before the fall period.

Newly established price schedules are holding firm, and even secondary prices are steady on pipe, nails and construction steels. Even though pig iron purchasers are in no hurry to load up on stocks after a \$4 a ton cut in price, it is very evident that the rapidly mounting scrap market is daily putting the lower pig iron price schedule in a better position. In fact, there is persistent talk of a \$1 advance being announced on Aug. 1, although no furnace has been found to express definite opinion on the possibility.

The two local autobody stamping plants have been in the market for quite sizable steel commitments during the week, all the steel being for 1939 models and scheduled for use by the end of August. But other major outlets here are making no worth-while commitments. The railroads are pleased with the possibility of increased revenue from advancing car loadings and improved passenger reve-

nues from higher rates which went into effect yesterday. For several months at least this added money will likely go into much needed roadbed repair and maintenance, with steel buying for cars, etc., likely to be delayed until late fall. The Brazilian Government is inquiring for 1000 cars and 26 locomotives, and three American builders will likely enter a joint tender. If accepted, some of the tonnage involved would be bought in this district. Local shipyards have considerable work on drafting boards, but no steel is coming out at the present time.

The outlook for construction steel appears more promising as Government money is pumped into a number of projects here. The Mount Gretna prison and White Hill boy's school are both out again for bids after many

....PIPE LINES....

Commonwealth Pipe Line Co., Muskegon, Mich., plans new welded steel pipe lines from properties in oil field district of Allegan County, Mich., to terminals at Muskegon and Grand Rapids, Mich., for crude oil transmission for refining plants at latter points.

Water and Power Resources Board, Commonwealth of Pennsylvania, Harrisburg, Pa., has awarded contract to Ragner Brothers, Union Trust Building, Pittsburgh, for new 10-in. steel pipe line in Crooked Creek dam district, Armstrong County, Pa., about 9100 lin. ft. for gas transmission, with couplings, fittings, etc. Award includes removal of about 3800 lin. ft. of existing 12-in. steel pipe line in same area.

United States Engineer Office, New York District, Army Building, New York, closes bids Aug. 2 for two suction wedge pipes, two trunnion pipe liners, two plate liners and two cast steel pump castings (Circular 28).

Naph-Sol Refining Co., Muskegon, Mich., has authorized immediate construction of new 4-in. welded steel pipe line from properties in Monterey oil field district, Allegan County, Mich., to Vriesland, Mich., about 16 miles, for crude oil transmission to new bulk storage and loading station to be located at last noted place, from which point oil will be transported to company refinery at Muskegon.

Bureau of Reclamation, Denver, has low bid from Emsco Derrick & Equipment Co., Los Angeles, at \$78,786 for 20 102-in. dia. welded plate-steel conduit linings and two flange layout plates for outlet works at elevation of 1036 ft., at Grand Coulee Dam, Columbia Basin project, Wash.; also, low bid from Chicago Bridge & Iron Works, Chicago, for 20 similar plate-steel conduit linings for outlet works at elevation of 1136 ft., at \$76,640 (Specifications 789).

months of being held up, a Westmoreland County viaduct will take 700 tons of shapes and miscellaneous highway projects will absorb several more hundred tons of shapes and bars. The Delaware River Tunnel Corp. was granted a new permit by the Public Utility Commission yesterday to construct a vehicular tunnel under the Delaware River between Hog Island and Mantua Creek, and over a year's time this project will absorb a sizable tonnage of cast iron segments, reinforcing bars and structural shapes.

Scrap, although not selling in large volume, continues to move sharply upward, the No. 1 heavy melting grade now being available only in moderate lots in the price range between \$14 and \$14.50.

Imports

The following iron and steel imports were received here during the past week: 2½ tons of steel bars, 17 tons of steel angles, 10 tons of steel bands, 60 tons of steel shapes and 35 tons of steel lifts from Belgium; 520 tons of crude metallic mineral substance from Germany; 200 tons of ferromanganese from Czechoslovakia, and 5000 tons of chrome ore from the Philippine Islands.

Metropolitan Utilities District, Eighteenth and Harney Streets, Omaha, Neb., Col. T. A. Liesen, general manager, has authorized steel pipe for gas transmission, connecting gas plant with distributing lines in different parts of city.

....BUFFALO....

... Steel operations gain slightly ... Building projects mainly WPA work.

BUFFALO, July 26.—Steel operations are higher. Republic Steel Corp. has added one open-hearth, increasing the number active there from two to three. Bethlehem Steel Co. and Wickwire-Spencer continue with 12 and one respectively.

Pig-iron buying is slower, with purchasers satisfied to cover only immediate needs. Shipments are slightly better in certain spots.

The shape market is supported principally by WPA projects. Plans are almost completed for the \$1,500,000 school in Kenmore. The bidding date is also awaited for the Kleinhans Music Hall, which will cost the same amount. Little in the line of private construction is in the immediate offing.

...NEW YORK...

... Steel orders show decided improvement, miscellaneous small orders accounting for a good share ... Consumers continue to show caution.

NEW YORK, July 26.—Nearly all of the important steel mills have experienced a decided improvement in orders during the past week. Although the month started slowly owing to the holiday period and the uncertainty caused by price and basing point changes, the acceleration in business has brought July tonnage for most offices up to a point that assures a better total volume this month than in June.

While there is a sprinkling of fairly large orders, the bulk of the business is in relatively small lots, but orders are coming from a greater number of customers. The type and size of a great many of the orders indicate that they are for replenishment of vanishing inventories.

Although consumers continue to show caution in buying, a few have tried to protect themselves by making forward contracts.

Minor complications are arising under the new basing point plan. The steel companies are finding that every quotation gives them an additional amount of work owing to the greater number of basing points. A case in point is a question on a carload of sheets which a mill had to figure from five different basing points in order to arrive at the one which would give the consumer the lowest delivered price.

Pig Iron

With most consumers covered for third-quarter iron, the question of paramount interest now is the rate at which this iron will be taken. Most sellers see little change in shipments. On the other hand, one district representative upon returning from a trip to New England reported conditions among the foundries there definitely better. Several melters were observed to be operating at 80 to 90 per cent of their normal capacity and on a five-day basis. Heater firms are seasonally active and a firm with a Navy contract is operating three shifts. Textile equipment firms report an increase in their orders, although their own foundry activity has yet to show an increase. Machine tool plants are about holding their own, but report a pick-up in foreign

orders. A price rise of \$1 is still considered a certainty by some, and the question resolves itself into timing, Aug. 1 being considered a likely date.

Plates and Sheets

One plate seller reports a substantial pick-up in orders percentagewise, but the actual volume is still relatively small, averaging 10 tons per order. Most other district offices indicate no change in the low level of sales activity. Action is still awaited on the 30 scows to be purchased by the Department of Sanitation, and in the meantime a suggested plan of rezoning Jamaica Bay has thrown open the whole question of ash disposal in that area. A railroad bought a few tons of plates for car repairs. Central of Brazil is proceeding with plans to purchase 26 locomotives and 1000 freight cars in this country. For the present tank builders are the most active consumers of plates in a small way.

There has been some improvement in sheet sales, with both manufacturers and jobbers appearing to be more interested in replenishing supplies. Most orders are for prompt shipment and no forward buying has yet appeared. One district office reported sales for the mill as a whole last week the best in 21 weeks, orders coming from scattered miscellaneous sources, largely outside the automotive field.

REINFORCING STEEL

... Awards of 2800 tons; 8245 tons in new projects.

AWARDS

- 478 Tons, New York, Red Hook housing project foundation, to Truscon Steel Co., Youngstown.
- 400 Tons, Akron, Ohio, Market Street sewer, to Hardware & Supply Co., Akron; Marra & Sons, Cleveland, general contractors.
- 300 Tons, Dunn County, Wis., Menominee-Chippewa Falls road, to Bethlehem Steel Co., Bethlehem, Pa., through Kupfer Foundry & Iron Works, Madison, Wis.
- 200 Tons, Los Angeles, addition to Queen of Angels Hospital, to Blue Diamond Corp., Los Angeles.
- 190 Tons, Washington, automobile parking ramp, to Bethlehem Steel Co., through Dow-Weld, Inc., Washington.

- 130 Tons, Portland, Ore., bus terminal, to Mercer Steel Co., Portland; Hoffman Construction Co., Portland, general contractor.
- 163 Tons, Coram, Cal., warehouse for Central Valley project, Bureau of Reclamation (Invitation B-47131-A), bulk of tonnage to Bethlehem Steel Co., San Francisco.
- 140 Tons, Franklin County, Pa., highway bridge, to Bethlehem Steel Co.
- 140 Tons, Nitro, W. Va., American Viscose building, to Bethlehem Steel Co., Bethlehem, Pa.
- 100 Tons, Fort Wayne, Ind., Central High School, to Hugh J. Baker, Indianapolis.
- 100 Tons, Monroe, Wis., hospital, to Bethlehem Steel Co., Bethlehem, Pa.
- 100 Tons, Janesville, Wis., post office, to Calumet Steel Co., Chicago.
- 100 Tons, Chicago, Board of Local Improvements, to Inland Steel Co., Chicago, through Joseph T. Ryerson & Son, Inc.
- 100 Tons, Newton, Mass., Nurses' Home, to Joseph T. Ryerson & Son, Inc., Boston; Turner Construction Co., Boston, contractor.
- 100 Tons, Concord, N. H., State office building, to Joseph T. Ryerson & Son, Inc., Boston.

NEW REINFORCING BAR PROJECTS

- 1800 Tons, Mount Gretna, Pa., prison; bids Aug. 19.
- 1400 Tons, White Hills, Pa., boys' school; bids Aug. 19.
- 1215 Tons, St. Louis, cantilever and simple truss bridge across Mississippi River to East St. Louis; Waddell & Hardesty, 132 Maiden Lane, New York, consulting engineers.
- 1000 Tons, dam at Wappapello, Mo.; Hallett Construction Co., Crosby, Minn., low bidder on general contract.
- 872 Tons, Calexico, Cal., All-American Canal (Invitation B-42099-A); bids Aug. 2.
- 650 Tons, Johnstown, Pa., Johnstown channel improvement, Conemaugh River.
- 550 Tons, Cleveland, new billets for Cloverleaf intersection near Independence. Bates & Rogers Co., Chicago, submitted blanket bid; project also includes 49 tons of rail steel bars.
- Unstated Tonnage, Akron, Ohio, reservoir; bids Aug. 3.
- 500 Tons, Muncie, Ind., sewage disposal plant.
- 424 Tons, Camp Custer, Mich., Veterans' building; bids in.
- 323 Tons, Connecticut State highway, letting Aug. 1.
- 280 Tons, Knoxville, Iowa, Veterans' building; bids Aug. 2.
- 276 Tons, North Chicago, Ill., Veterans' building; bids in.
- 250 Tons, Canton, Ohio, Timken Technical High School, Gibbons-Grable Co., Canton, general contractor.
- 250 Tons, Bedford, Mass., Veterans' Hospital.
- 250 Tons, Chicago, Ogden Avenue grade separation.
- 250 Tons, Washington, Panama Canal Schedule No. 3364, Youngstown Sheet & Tube Co., Youngstown, low bidder.
- 250 Tons, Wyandotte, Mich., sewage disposal plant.
- 236 Tons, Portsmouth, Va., Norfolk Navy Yard requisition 1091 - NSAF; Hall-Hodges, Norfolk, Va., low bidder.
- 200 Tons, Quantico, Va., Navy Department, officers' quarters.
- 175 Tons, Manchester, N. H., armory.
- 150 Tons, White River Junction, Vt., Veterans' Hospital.
- 150 Tons, New York, East River bulkhead from East 15th Street to East 18th Street.
- 120 Tons, Galesburg, Ill., hotel.
- 100 Tons, Monroe, Wis., hospital.
- 100 Tons, Westerly, R. I., State road.

...NON-FERROUS...

... Copper rises 25 points on foreign buying pressure
... Zinc quiet with price unchanged ... Consumer demands for lead improving ... Heavy stock situation continues to discourage tin buying.

NEW YORK, July 26.—With the market tone for the red metal consistently bullish abroad, the market here went through a sympathetic $\frac{1}{8}$ c. advance last Friday, to be followed by another $\frac{1}{8}$ c. advance yesterday, the current ruling quotation being 10c. a lb., for electrolytic metal delivered Connecticut Valley points. American smelters are releasing quite sizable quantities for foreign delivery, the price at Continental base ports at the moment being in the neighborhood of 10.32 $\frac{1}{2}$ c. a lb. for delivery periods not beyond September. Sales volume in the domestic market over the past week has been

brisk enough to lift the total turnover for the month up to the 23rd to about 106,000 tons, a rather sizable monthly record. Currently, domestic users of copper are interested in new commitments partially because of speculative possibilities and partly because there is a belief that the next three months will witness a fair improvement in fabricating activity.

Zinc

The spelter market is quite listless, with the occasional carlots changing hands, not competitive enough to influence the market materially. Sales volume for the week was slightly over

5000 tons, and shipments held up to a volume that was indicative of a fairly good consumptive activity in the metal. Despite the way the zinc market is dragging at the moment, there is no indication that the 4.75c. price will undergo any downward revision, particularly in view of the more active tone in copper and the steadiness in the foreign zinc market. Prices for ore in the Tri-State district are unchanged, but production and sales are showing moderate improvement.

Lead

Deriving strength from a better tone in copper, the lead market over the past several days has experienced a moderate uplift in day-to-day buying. The price is still quite firm at 4.90c., New York, July positions are considered fully covered, and estimated consumers' August requirements are a little over two-thirds covered. With September books due to open the last of this month, it is obvious that lead sellers have before them a period of fairly decent demand as consumers seek protection on forward position and perhaps even a little speculative stocking for ultimate consumption later in the fall. The lead market has also secured considerable sympathetic support from a constantly improving tone in the London market.

Tin

Buyers of tin still seem to be completely indifferent to market developments, turnover therefore being almost nil. None the less, sellers are rather encouraged by the persistent underlying bullishness of the situation, particularly in foreign markets, and with prices slowly creeping up there is no inclination to try to force sales and confuse the market. Confident that when consumers need to buy the price situation will be more in the sellers' favor, those with tin on hand are fully satisfied to wait out the current lethargy. One obvious reason why tin buying has no snap is the overhanging stocks in consumers' hands. The Bureau of Mines latest report shows that tin plate makers have enough tin stock now on hand to take care of all the tin plate which will possibly be made up through September. New York prices for Straits metal ranged within very narrow limits during the week, ending up today slightly higher at 43.75c. a lb. In London prompt metal on first call today was at £194 7s. 6d., three-months metal at £195 5s. and the market at Singapore was fairly firm at £200 12s. 6d.

The Week's Prices. Cents Per Pound for Early Delivery

| | July 20 | July 21 | July 22 | July 23 | July 25 | July 26 |
|-----------------------------|---------|---------|---------|---------|---------|---------|
| Electrolytic copper, Conn.* | 9.75 | 9.75 | 9.75 | 9.875 | 9.875 | 10.00 |
| Lake copper, N. Y. | 9.875 | 9.875 | 9.875 | 10.00 | 10.00 | 10.125 |
| Straits tin, spot, New York | 43.50 | 43.40 | 43.50 | 43.75 | 43.75 | 43.75 |
| Zinc, East St. Louis | 4.75 | 4.75 | 4.75 | 4.75 | 4.75 | 4.75 |
| Zinc, New York | 5.14 | 5.14 | 5.14 | 5.14 | 5.14 | 5.14 |
| Lead, St. Louis | 4.75 | 4.75 | 4.75 | 4.75 | 4.75 | 4.75 |
| Lead, New York | 4.90 | 4.90 | 4.90 | 4.90 | 4.90 | 4.90 |

*Delivered Connecticut Valley; price $\frac{1}{8}$ c. lower delivered in New York.
Aluminum, virgin, 99 per cent plus 20.00c.-21.00c. a lb., delivered.
Aluminum No. 12 remelt No. 2 standard, in carloads, 19.00c. to 19.50c. a lb., delivered.
Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.
Antimony, Asiatic, 14.00c. a lb., prompt, f.o.b., New York.
Antimony, American, 11.25c. per lb., prompt shipment, New York.
Quicksilver, \$82.00 per flask of 76 lb.
Brass ingots, commercial 85-5-5-5, 10.25c. a lb., less carload, delivered in Middle West $\frac{1}{4}$ c. a lb. is added on orders for less than 40,000 lb.

| From New York Warehouse Delivered Prices, Base per Lb. | |
|---|--------------------|
| Tin, Straits pig | 45.00c. to 46.00c. |
| Tin, bar | 47.00c. to 48.00c. |
| Copper, Lake | 11.00c. to 12.00c. |
| Copper, electrolytic | 10.75c. to 11.75c. |
| Copper, castings | 10.25c. to 11.25c. |
| *Copper sheets, hot-rolled | 18.125c. |
| *High brass sheets | 16.625c. |
| *Seamless brass tubes | 19.375c. |
| *Seamless copper tubes | 18.625c. |
| *Brass rods | 12.625c. |
| Zinc, slabs | 6.25c. to 7.25c. |
| Zinc, sheets (No. 9), casks, 1200 lb. and over | 10.50c. |
| Lead, American pig | 5.50c. to 6.50c. |
| Lead, bar | 6.25c. to 6.625c. |
| Lead, sheets, cut | 7.75c. |
| Antimony, Asiatic | 14.75c. to 15.75c. |
| Alum., virgin, 99 per cent plus | 22.50c. to 24.00c. |
| Alum., No. 1 for remelting, 98 to 99 per cent | 19.50c. to 21.00c. |
| Solder, $\frac{1}{2}$ and $\frac{1}{2}$ | 29.50c. to 30.50c. |
| Babbitt metal, commercial grade | 20.00c. to 50.00c. |

*These prices, which are also for delivery from Chicago and Cleveland warehouses, are quoted with 25 per cent allowed off for extras, except copper sheets and brass rods, on which allowance is 40 per cent.

| From Cleveland Warehouse Delivered Prices per Lb. | |
|--|---------|
| Tin, Straits, pig | 47.75c. |

| | |
|---|--------------------|
| Tin, bar | 49.75c. |
| Copper, Lake | 11.00c. to 11.25c. |
| Copper, electrolytic | 11.00c. to 11.25c. |
| Copper, castings | 10.75c. |
| Zinc, slabs | 7.50c. to 7.75c. |
| Lead, American pig | 5.40c. to 5.65c. |
| Lead, bar | 8.50c. |
| Antimony, Asiatic | 17.75c. to 18.00c. |
| Babbitt metal, medium grade | 21.50c. |
| Babbitt metal, high grade | 51.75c. |
| Solder, $\frac{1}{2}$ and $\frac{1}{2}$ | 28.50c. |

Old Metals Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

| | Dealers' Buying Prices | Dealers' Selling Prices |
|-------------------------------------|------------------------|-------------------------|
| Copper, hvy. crucible | 7.750c. | 8.500c. |
| Copper, hvy. and wire | 6.75c. | 7.25c. |
| Copper, light and bottoms | 6.00c. | 6.25c. |
| Brass, heavy | 4.125c. | 4.625c. |
| Brass, light | 3.125c. | 3.975c. |
| Hvy. machine composition | 6.50c. | 8.00c. |
| No. 1 yel. brass turnings | 4.125c. | 4.625c. |
| No. 1 red brass or compos. turnings | 5.985c. | 6.125c. |
| Lead, heavy | 3.50c. | 3.875c. |
| Cast aluminum | 6.00c. | 7.25c. |
| Sheet aluminum | 10.50c. | 12.00c. |
| Zinc | 2.125c. | 3.375c. |

IRON AND STEEL SCRAP

... Continued bullish movement brings scrap to high level of year ... Composite now at \$14.08.

JULY 26.—With No. 1 steel being offered by a broker at \$16 and a Pittsburgh mill being willing to pay \$15.50 a ton, the Pittsburgh market shot up \$1 a ton on the principal steel making grades in the last two days, making No. 1 steel quotable at \$15 to \$15.50. With advances of 50c. on the whole list at Chicago and a like amount on leading grades at Philadelphia, the composite price advanced 66c. this week to \$14.08, high for the year. For five weeks in January, the average had clung tenaciously at \$14, having risen from a low point of \$12.92 in mid-November. The high spot of 1937 was on March 30, when the composite price stood at \$21.92. The current figure stands \$3.08 above the low of \$11 reached on June 7.

The only markets not feeling the present bullish movement are Cleveland, Youngstown and Detroit. At Cleveland, cast grades are up 50c. a ton, however, and in the motor city a further testing of prices is awaited. Mill purchases are not substantial in any district. Dealers are hanging on to their stocks and at Buffalo, for example, are refusing to accept buyers' bids. With the present scarcity of material, buying prices for export grades have risen as much as \$2 at New York in the past week.

Pittsburgh

Sentiment in this district continues very bullish due partially to the rising ingot rate. No. 1 heavy melting steel is being quoted this week at \$15 to \$15.50 a ton because of the willingness of a local mill to pay \$15.50 for a round tonnage of No. 1 steel which was offered it by a broker at \$16. No action has yet been taken on this material. Earlier in the week, several fair-sized tonnages were purchased at \$15 by mills here and some small lots of a grade a little better than No. 1 were sold at \$15.50.

Chicago

High prices for railroad offerings, ranging around \$14 in at least two cases, a reported mill sale at \$13, and continued tightness in available supplies, have boosted the entire list 50c. a ton, No. 1 being quoted at \$12.50 to \$13. Dealers are holding fast in anticipation of still higher prices. A few cars are said to have brought \$13.25, but it is understood that fair tonnages can be picked up at \$13 flat. Under the present set-up, any broker taking an order, unless material already is on hand, will stand to lose on covering, as dealers apparently are waiting for just such a situation.

Philadelphia

Additional increases in dealer buying prices have failed to bring much material into yards for processing, the result being that despite extreme superficial activity in scrap the shears and presses in yards are working on skeleton shifts. The few who have scrap accumulations show every indication of hanging on for considerably more profit, which profit they fully believe will be established by early fall despite the current hesitancy of local mills to come in for heavy forward commitments. Mill prices on heavy melting grades and bundles are up again 50c. this week, solely on the basis of broker-broker and broker-dealer competition for moderate parcels of available material for delivery on old orders. On the other hand, advances in certain cast grades and railroad specialties were adequately supported by sales during the week into consumption.

Cleveland

The Youngstown and Cleveland markets during the past week have leveled off at the new higher brackets. Foundry grades at Cleveland are moving fairly well right now and are up 50c. per ton, but otherwise higher quotations could not be justified by the necessary amount of business.

Buffalo

The market remains deadlocked with dealers refusing to accept buyers' bids. The demand for scrap from small foundries and small mills has increased, but there has been no purchasing by the larger mills who stand in no immediate need of scrap. In the face of this situation the market jumped another 50c. this week. This increase places No. 1 heavy melting at \$13 to \$13.50 with the usual differential in the allied grades. Railroad malleable is up \$2, at \$14.50 to \$15.

St. Louis

Further advances were made in dealers' buying prices of scrap iron of from 50c. to \$1 a ton during the week. It still is a dealers' market, and higher prices are being offered in an endeavor to bring out scrap iron to deliver on short sales. Steel mills in the St. Louis area are out of the market. A list issued by the Terminal Railway Association amounting to 3000 tons is said to have brought the present prices. The St. Louis-San Francisco list of approximately 5000 tons closes this week.

Cincinnati

A special sale of railroad and industrial material made at the end of last week was said to have brought \$15.30 delivered this area. While its special nature hardly sets the market for regular No. 1, the effect of this sale has been to advance all steel making grades and railroad items 75c. and to raise miscellaneous

items 25c. Prior to this sale, dealers had been bidding higher for all grades but were not attracting out much material.

Detroit

Despite extreme broker bullishness that is being picked up and carried along by yard dealers, the high scrap prices in the Detroit market remain virtually untested. Low production in the automobile plants in the first part of August will throw so little scrap on the market that the current activity provides no criterion to determine the real strength of the market. The condition is well summed up by the reported comment of one mill buyer who said that he would defer purchase for consumption until after Aug. 15. It is his belief that automotive lists then would be substantial enough to measure the substance behind today's bullishness. At the same time the ingot rate in Detroit has been stepped up in the last week from less than 30 per cent to nearly 50 per cent with indication that it will be further increased possibly 15 or 20 per cent more early in August. This should provide incentive for local mill buying. One broker is reported actively interested in stove plate, being willing to pay more than \$1 above the generally accepted quotation in this area.

New York

Buying prices for export material have again been raised, this time 50c., on Nos. 1 and 2 steel and \$1.50 and \$2 on No. 2 cast and stove plate, respectively. As a result, scrap is coming out a little more freely. Shipments to Europe are steadily going forward. Department of Commerce figures for June, just released, indicate that of the 160,066 tons exported, 85,943 tons went to Japan; 36,350 to Great Britain; 11,489 to Italy; and 10,304 to Germany. This total compares with 374,320 tons shipped in May. The July figures will undoubtedly show a strong swing toward Germany and Italy in view of recent shipments to those countries.

Boston

The slowness of material coming on the market continues the outstanding feature. Export prices on heavy melting steel average 25c. a ton higher than a week ago, and at least one shipper admits he will pay 50c. a ton more for a tonnage of railroad scrap. The Federal court has told Rutland Railroad Co. bondholders to be prepared to take over the road. If they do, the 400 miles of trackage and all properties will be junked. In that event the railroad scrap supply situation will be relieved. Steel turnings for Weirton delivery are now \$3.40 a ton on cars, up \$1.05 from last previous sale price. Brokers assume bundled skeleton prices will be higher this week.

National Steel Earns 46c. in Second Quarter

NATIONAL STEEL CORP. reports for the quarter ended June 30, 1938, a net income, after all charges, of \$1,005,863, equal to 46c. a share on common stock. This compares with a net income of \$1,088,635 or 50c. a share in the first quarter of 1938.

Iron and Steel Scrap Prices

PITTSBURGH

Per gross ton delivered to consumer:

| | |
|--------------------------|--------------------|
| No. 1 hvy. mltng. steel. | \$15.00 to \$15.50 |
| Railroad hvy. mltng. | 15.50 to 16.00 |
| No. 2 hvy. mltng. steel | 13.50 to 14.00 |
| Scrap rails | 15.00 to 15.50 |
| Rails 3 ft. and under. | 16.00 to 16.50 |
| Comp. steel | 15.00 to 15.50 |
| Hand bundled sheets. | 14.00 to 14.50 |
| Hvy. steel axle turn. | 13.50 to 14.00 |
| Machine shop turn. | 8.50 to 9.00 |
| Short shov. turn. | 8.50 to 9.00 |
| Mixed bor. & turn. | 6.50 to 7.00 |
| Cast iron borings. | 6.50 to 7.00 |
| Cast iron carwheels. | 14.00 to 14.50 |
| Hvy. breakable cast. | 12.50 to 13.00 |
| No. 1 cupola cast. | 14.50 to 15.00 |
| RR. knuckles & cplrs. | 16.50 to 17.00 |
| Rail coil & leaf springs | 16.50 to 17.00 |
| Rolled steel wheels | 16.50 to 17.00 |
| Low phos. billet crops. | 16.50 to 17.00 |
| Low phos. punchings. | 15.00 to 15.50 |
| Low phos. plate | 14.00 to 15.00 |

PHILADELPHIA

Per gross ton delivered to consumer:

| | |
|--------------------------|--------------------|
| No. 1 hvy. mltng. steel. | \$14.00 to \$14.50 |
| No. 2 hvy. mltng. steel. | 12.50 to 13.00 |
| Hydraulic bund., new. | 14.00 to 14.50 |
| Hydraulic bund., old. | 10.50 to 11.00 |
| Steel rails for rolling. | 17.00 to 17.50 |
| Cast iron carwheels. | 15.50 to 16.00 |
| Hvy. breakable cast. | 15.00 to 15.50 |
| No. 1 cast | 16.00 to 16.50 |
| Stove plate (steel wks.) | 12.50 to 13.00 |
| Railroad malleable | 15.00 to 15.50 |
| Machine shop turn. | 8.00 to 8.50 |
| No. 1 blast furnace | 6.50 to 7.00 |
| Cast borings | 6.50 to 7.00 |
| Heavy axle turnings. | 10.00 to 10.50 |
| No. 1 low phos. hvy. | 16.50 to 17.00 |
| Couplers & knuckles. | 16.50 to 17.00 |
| Rolled steel wheels | 16.50 to 17.00 |
| Steel axles | 20.00 to 20.50 |
| Shafting | 19.00 to 19.50 |
| No. 1 RR. wrought. | 15.00 to 15.50 |
| Spec. iron & steel pipe | 12.00 to 12.50 |
| No. 1 forge fire. | 10.50 to 11.00 |
| Cast borings (chem.) | 9.50 to 10.00 |

CHICAGO

Delivered to Chicago district consumers:

| | Per Gross Ton |
|------------------------------------|--------------------|
| Hvy. mltng. steel. | \$12.50 to \$13.00 |
| Auto. hvy. mltng. steel alloy free | 11.00 to 11.50 |
| No. 2 auto. steel | 10.50 to 11.00 |
| Shoveling steel | 12.50 to 13.00 |
| Factory bundles | 11.75 to 12.25 |
| Dealers' bundles | 11.00 to 11.50 |
| Drop forge flashings. | 9.75 to 10.25 |
| No. 1 busheling | 10.50 to 11.00 |
| No. 2 busheling, old. | 4.75 to 5.25 |
| Rolled carwheels | 15.00 to 15.50 |
| Railroad tires, cut. | 15.50 to 16.00 |
| Railroad leaf springs. | 15.50 to 16.00 |
| Steel coup. & knuckles | 14.50 to 15.00 |
| Axle turnings | 11.50 to 12.00 |
| Coil springs | 16.00 to 16.50 |
| Axle turn. (elec.) | 12.00 to 12.50 |
| Low phos. punchings. | 15.50 to 16.00 |
| and under | 14.50 to 15.00 |
| Cast iron borings | 6.00 to 6.50 |
| Short shov. turn. | 7.00 to 7.50 |
| Machine shop turn. | 6.00 to 6.50 |
| Revolving rails | 16.00 to 16.50 |
| Steel rails under 3 ft. | 15.00 to 15.50 |
| Steel rails under 2 ft. | 15.50 to 16.00 |
| Angle bars, steel | 13.50 to 14.00 |
| Cast iron carwheels | 14.00 to 14.50 |
| Railroad malleable | 13.75 to 14.25 |
| Agric. malleable | 11.00 to 11.50 |

Per Net Ton

| | |
|-----------------------|----------------|
| Iron car axles | 18.50 to 19.00 |
| Steel car axles | 18.00 to 18.50 |
| No. 1 RR. wrought. | 10.75 to 11.25 |
| No. 2 RR. wrought. | 11.25 to 11.75 |
| Locomotive tires | 16.00 to 16.50 |
| Pipes and flues | 9.00 to 9.50 |
| No. 1 machinery cast. | 12.50 to 13.00 |
| Clean auto. cast. | 11.50 to 12.00 |
| No. 1 railroad cast. | 12.25 to 12.75 |
| No. 1 agric. cast. | 11.00 to 11.50 |
| Stove plate | 9.00 to 9.50 |
| Grate bars | 9.00 to 9.50 |
| Brake shoes | 9.50 to 10.00 |

YOUNGSTOWN

Per gross ton delivered to consumer:

| | |
|--------------------------|--------------------|
| No. 1 hvy. mltng. steel. | \$13.00 to \$13.50 |
| Hydraulic bundles | 12.50 to 13.00 |
| Machine shop turn. | 8.50 to 9.00 |

CLEVELAND

Per gross ton delivered to consumer:

| | |
|----------------------------------|--------------------|
| No. 1 hvy. mltng. steel. | \$12.00 to \$12.50 |
| No. 2 hvy. mltng. steel. | 11.00 to 11.50 |
| Comp. sheet steel | 11.25 to 11.75 |
| Light bund. stampings | 8.50 to 9.00 |
| Drop forge flashings. | 10.00 to 10.50 |
| Machine shop turn. | 6.00 to 6.50 |
| Short shov. turn. | 6.75 to 7.25 |
| No. 1 busheling | 10.50 to 11.00 |
| Steel axle turnings. | 10.00 to 10.50 |
| Low phos. billet and bloom crops | 17.00 to 17.50 |
| Cast iron borings | 6.00 to 6.50 |
| Mixed bor. & turn. | 6.00 to 6.50 |
| No. 2 busheling | 6.00 to 6.50 |
| No. 1 cast | 14.50 to 15.00 |
| Railroad grate bars | 9.50 to 10.00 |
| Stove plate | 9.00 to 9.50 |
| Rails under 3 ft. | 16.50 to 17.00 |
| Rails for rolling | 14.50 to 15.00 |
| Railroad malleable | 14.50 to 15.00 |
| Cast iron carwheels | 15.00 to 15.50 |

BUFFALO

Per gross ton delivered to consumer:

| | |
|--------------------------|--------------------|
| No. 1 hvy. mltng. steel. | \$13.00 to \$13.50 |
| No. 2 hvy. mltng. steel. | 11.00 to 11.50 |
| Scrap rails | 15.00 to 15.50 |
| New hvy. bndled sheets | 11.00 to 11.50 |
| Old hydraul. bundles. | 9.50 to 10.00 |
| Drop forge flashings. | 11.00 to 11.50 |
| No. 1 busheling | 11.00 to 11.50 |
| Hvy. axle turnings. | 10.50 to 11.00 |
| Machine shop turn. | 6.50 to 7.00 |
| Knuckles & couplers. | 16.50 to 17.00 |
| Coil & leaf springs | 16.50 to 17.00 |
| Rolled steel wheels | 16.00 to 16.50 |
| Low phos. billet crops. | 15.50 to 16.00 |
| Shov. turnings | 6.50 to 7.00 |
| Mixed bor. & turn. | 6.50 to 7.00 |
| Cast iron borings | 6.50 to 7.00 |
| Steel car axles | 16.50 to 17.00 |
| No. 1 machinery cast. | 15.00 to 15.50 |
| No. 1 cupola cast. | 14.50 to 15.00 |
| Stove plate | 12.00 to 12.50 |
| Steel rails under 3 ft. | 17.50 to 18.00 |
| Cast iron carwheels. | 13.50 to 14.00 |
| Railroad malleable | 14.50 to 15.00 |
| Chemical borings | 8.50 to 9.00 |

ST. LOUIS

Dealers' buying prices per gross ton delivered to consumer:

| | |
|--------------------------|--------------------|
| Selected hvy. melting. | \$12.00 to \$12.50 |
| No. 1 hvy. melting. | 11.50 to 12.00 |
| No. 2 hvy. melting. | 10.75 to 11.25 |
| No. 1 locomotive tires. | 13.00 to 13.50 |
| Misc. stand. sec. rails. | 12.00 to 12.50 |
| Railroad springs | 13.50 to 14.00 |
| Bundled sheets | 5.50 to 6.00 |
| No. 1 busheling | 5.50 to 6.00 |
| Cast bor. & turn. | 3.00 to 3.50 |
| Machine shop turn. | 3.00 to 3.50 |
| Heavy turnings | 8.00 to 8.50 |
| Rails for rolling | 15.00 to 15.50 |
| Steel car axles | 16.50 to 17.00 |
| Iron car axles | 19.50 to 20.00 |
| No. 1 RR. wrought. | 8.00 to 8.50 |
| No. 2 RR. wrought. | 11.50 to 12.00 |
| Steel rails under 3 ft. | 14.00 to 14.50 |
| Steel angle bars | 13.00 to 13.50 |
| Cast iron carwheels. | 12.00 to 12.50 |
| No. 1 machinery cast. | 12.25 to 12.75 |
| Railroad malleable | 11.50 to 12.00 |
| No. 1 railroad cast | 10.50 to 11.00 |
| Stove plate | 8.00 to 8.50 |
| Grate bars | 9.00 to 9.50 |
| Brake shoes | 9.00 to 9.50 |

CINCINNATI

Dealers' buying prices per gross ton at yards:

| | |
|--------------------------|--------------------|
| No. 1 hvy. mltng. steel. | \$11.50 to \$12.00 |
| No. 2 hvy. mltng. steel. | 9.25 to 9.75 |
| Scrap rails for mltng. | 15.75 to 16.25 |
| Loose sheet clippings. | 6.50 to 7.00 |
| Hydrau. b'ndled sheets | 10.50 to 11.00 |
| Cast iron borings | 3.50 to 4.00 |
| Machine shop turn. | 4.00 to 4.50 |
| No. 1 busheling | 8.25 to 8.75 |
| No. 2 busheling | 3.00 to 3.50 |
| Rails for rolling | 17.75 to 18.25 |
| No. 1 locomotive tires. | 14.50 to 15.00 |
| Short rails | 18.25 to 18.75 |
| Cast iron carwheels. | 12.75 to 13.25 |
| No. 1 machinery cast. | 11.75 to 12.25 |
| No. 1 railroad cast. | 10.75 to 11.25 |
| Burnt cast | 7.25 to 7.75 |
| Stove plate | 7.25 to 7.75 |
| Agricul. malleable | 11.75 to 12.25 |
| Railroad malleable | 14.25 to 15.25 |
| Mixed hvy. cast. | 9.00 to 9.50 |

BIRMINGHAM

Per gross ton delivered to consumer:

| | |
|-----------------------|--------------------|
| Hvy. melting steel. | \$12.00 to \$12.50 |
| Scrap steel rails | 14.00 to 14.50 |
| Short shov. turnings. | 7.50 to 8.10 |
| Stove plate | 9.00 to 10.00 |
| Steel axles | 15.00 to 16.00 |
| Iron axles | 15.00 to 16.00 |
| No. 1 RR. wrought. | 10.00 |
| Rails for rolling | 15.00 to 16.00 |
| No. 1 cast | 14.50 to 15.00 |
| Tramcar wheels | 14.50 |

DETROIT

Dealers' buying prices per gross ton:

| | |
|--------------------------|--------------------|
| No. 1 hvy. mltng. steel. | \$10.00 to \$10.50 |
| No. 2 hvy. mltng. steel. | 8.50 to 9.00 |
| Borings and turnings. | 5.50 to 6.00 |
| Long turnings | 6.00 to 6.50 |
| Short shov. turnings. | 7.50 to 8.00 |
| No. 1 machinery cast. | 11.50 to 12.00 |
| Automotive cast | 11.50 to 12.00 |
| Hvy. breakable cast. | 9.00 to 9.50 |
| Hydraul. comp. sheets | 10.50 to 11.00 |
| Stove plate | 6.75 to 7.25 |
| New factory bushel. | 10.00 to 10.50 |
| Old No. 2 busheling. | 2.50 to 3.00 |
| Sheet clippings | 7.50 to 8.00 |
| Flashings | 8.00 to 8.50 |
| Low phos. plate scrap | 11.00 to 11.50 |

NEW YORK

Dealers' buying prices per gross ton on cars:

| | |
|---|--------------------|
| No. 1 hvy. mltng. steel. | \$10.00 to \$10.50 |
| No. 2 hvy. mltng. steel. | 8.50 to 9.00 |
| Hvy. breakable cast. | 11.00 to 11.50 |
| No. 1 machinery cast. | 11.50 to 12.00 |
| No. 2 cast | 9.00 to 9.50 |
| Stove plate | 8.50 to 9.00 |
| Steel car axles | 20.00 to 20.50 |
| Shafting | 15.00 to 15.50 |
| No. 1 RR. wrought. | 11.00 to 11.50 |
| No. 1 wrought long. | 9.50 to 10.00 |
| Spec. iron & steel pipe | 8.50 to 9.00 |
| Rails for rolling | 16.00 to 16.50 |
| Clean steel turnings* | 3.50 to 4.00 |
| Cast borings* | 3.00 to 3.50 |
| No. 1 blast furnace. | 3.00 to 3.50 |
| Cast borings (chem.) | 9.50 to 10.00 |
| Unprepared yard scrap | 4.50 to 5.00 |
| Light iron | 3.00 to 3.50 |
| Per gross ton, delivered local foundries: | |
| No. 1 machn. cast | \$13.00 to \$14.00 |
| No. 2 cast | 10.50 to 11.00 |

*\$1.50 less for truck loads.

BOSTON

Dealers' buying prices per gross ton:

| | |
|---|--------------------|
| No. 1 hvy. mltng. steel. | \$13.00 to \$13.50 |
| Scrap rails | 13.00 to 13.50 |
| No. 2 steel | 12.00 to 12.50 |
| Breakable cast | 9.00 to 9.25 |
| Machine shop turn. | 3.40 |
| Mixed bor. & turn. | 3.30 |
| Bun. skeleton long. | 5.50 to 5.75 |
| Shafting | 13.50 to 14.00 |
| Cast bor. chemical | 5.50 |
| Per gross ton delivered consumers' yards: | |
| Textile cast | \$12.00 to \$12.50 |
| No. 1 machine cast. | 12.00 to 12.50 |

PACIFIC COAST

Per gross ton delivered to consumer:

| | |
|--------------------------|--------------------|
| No. 1 hvy. mltng. steel. | \$11.65 to \$12.15 |
| No. 2 hvy. mltng. steel. | 10.65 to 11.15 |

CANADA

Dealers' buying prices at their yards, per gross ton:

| | Toronto | Montreal |
|--------------------------|---------|----------|
| No. 1 hvy. mltng. steel. | \$10.50 | \$9.50 |
| No. 2 hvy. mltng. steel. | 9.50 | 8.50 |
| Mixed dealers steel. | 8.50 | 7.50 |
| Scrap pipe | 8.50 | 7.50 |
| Steel turnings | 7.50 | 7.00 |
| Cast borings | 8.50 | 7.50 |
| Machinery cast | 15.00 | 14.00 |
| Dealers cast | 13.00 | 12.00 |
| Stove plate | 11.00 | 10.50 |

EXPORT

Dealers' buying prices per gross ton:

New York, truck lots, delivered, barges

| | |
|--------------------------|--------------------|
| No. 1 hvy. mltng. steel. | \$11.00 to \$11.50 |
| No. 2 hvy. mltng. steel. | 9.50 to 10.00 |
| No. 2 cast | 10.00 to 11.00 |
| Stove plate | 9.00 to 10.00 |

Boston on cars at Army Base or Mystic Wharf

| | |
|--------------------------|--------------------|
| No. 1 hvy. mltng. steel. | \$11.25 to \$11.50 |
| No. 2 hvy. mltng. steel. | 10.25 to 10.50 |
| Rails (scrap) | 11.25 to 11.75 |

Philadelphia, delivered alongside boats, Port Richmond

| | |
|--------------------------|---------|
| No. 1 hvy. mltng. steel. | Nominal |
| No. 2 hvy. mltng. steel. | Nominal |

PRICES ON FINISHED AND SEMI-FINISHED IRON AND STEEL

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point (Rerolling only). Prices delivered Detroit are \$2 higher. F.o.b. Duluth, billets only, \$2 higher.

Per Gross Ton

Rerolling\$34.00
Forging quality 40.00

Sheet Bars

Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton

Open-hearth or bessemer\$34.00

Skelp

Pittsburgh, Chicago, Youngstown, Coatesville, Pa., Sparrows Point, Md.

Per Lb.

Grooved, universal and sheared1.90c.

Wire Rods

(No. 5 to 9/32 in.)

Per Gross Ton

Pittsburgh, Chicago or Cleveland\$43.00
Worcester, Mass. 45.00
Birmingham 43.00
San Francisco 52.00
Rods over 9/32 in. or 47/64 in., inclusive, \$5 a ton over base.

SOFT STEEL BARS

Base per Lb.

Pittsburgh, Chicago, Gary, Cleveland, Buffalo and Birmingham 2.25c.
Detroit, delivered 2.35c.
Duluth 2.35c.
Philadelphia delivered 2.57c.
New York 2.59c.
On cars dock Gulf ports 2.60c.
On cars dock Pacific ports 2.85c.

RAIL STEEL BARS

(For merchant trade)

Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham 2.10c.
On cars dock Tex. Gulf ports. (—)
On cars dock Pacific ports. (—)

BILLET STEEL REINFORCING BARS

(Straight lengths as quoted by distributors)

Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Cleveland, Youngstown or Sparrows Pt. 2.05c.
Detroit, delivered 2.15c.
On cars dock Tex. Gulf ports. 2.40c.
On cars dock Pacific ports. 2.50c.

RAIL STEEL REINFORCING BARS

(Straight lengths as quoted by distributors)

Pittsburgh, Chicago, Gary, Buffalo, Cleveland, Youngstown or Birmingham 1.90c.
Detroit, delivered 2.00c.
On cars dock Tex. Gulf ports. (—)
On cars dock Pacific ports. (—)

IRON BARS

Chicago and Terre Haute 2.15c.
Pittsburgh (refined) 3.60c.

COLD FINISHED BARS AND SHAFTING*

Base per Lb.

Pittsburgh, Buffalo, Cleveland, Chicago and Gary 2.70c.
Detroit 2.75c.

* In quantities of 10,000 to 19,999 lb.

PLATES

Base per Lb.

Pittsburgh, Chicago, Gary, Birmingham, Sparrows Point, Cleveland, Youngstown, Coatesville, Claymont, Del. 2.10c.
Philadelphia, del'd 2.15c.
New York, del'd 2.29c.
On cars dock Gulf ports 2.45c.
On cars dock Pacific ports 2.70c.
Wrought iron plates, P't'g. 3.80c.

FLOOR PLATES

Pittsburgh or Chicago 3.35c.
New York, del'd 3.71c.
On cars dock Gulf ports 3.70c.
On cars dock Pacific ports 3.95c.

STRUCTURAL SHAPES

Base per Lb.

Pittsburgh, Chicago, Gary, Buffalo, Bethlehem or Birmingham 2.10c.
Philadelphia, del'd 2.215c.
New York, del'd 2.27c.
On cars dock Gulf ports 2.45c.
On cars dock Pacific ports 2.70c.

STEEL SHEET PILING

Base per Lb.

Pittsburgh, Chicago or Buffalo 2.40c.
On cars dock Gulf ports 2.85c.
On cars dock Pacific ports 2.90c.

RAILS AND TRACK SUPPLIES

F.o.b. Mill

Standard rails, heavier than 60 lb., per gross ton\$42.50
Angle bars, per 100 lb. 2.80

F.o.b. Basing Points

Light rails (from billets) per gross ton\$40.00
Light rails (from rail steel) per gross ton 39.00

Base per Lb.

Spikes 3.15c.
Tie plates, steel 2.30c.
Tie plates, Pacific Coast ports. 2.40c.
Track bolts, to steam railroads 4.35c.
Track bolts, to jobbers, all sizes (per 100 counts) 65-5 per cent off list

Basing points on light rails are Pittsburgh, Chicago and Birmingham; on spikes and tie plates, Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minnequa, Colo., Birmingham and Pacific Coast ports; on tie plates alone, Steelton, Pa.; Buffalo; on spikes alone, Youngstown, Lebanon, Pa., Richmond, Va.

SHEETS

PRICES F.O.B. UNLESS OTHERWISE NOTED

Hot Rolled

Base per Lb.

Pittsburgh, Gary, Birmingham, Buffalo, Sparrows Point, Cleveland, Youngstown or Middletown 2.15c.
Detroit, delivered 2.25c.
Philadelphia, delivered 2.32c.
Granite City 2.25c.
On cars dock Pacific ports 2.75c.
Wrought iron, Pittsburgh 4.25c.

Cold Rolled*

Pittsburgh, Gary, Buffalo, Youngstown, Cleveland or Middletown 3.20c.
Detroit, delivered 3.30c.
Granite City 3.30c.
Philadelphia, delivered 3.52c.
On cars dock Pacific ports 3.80c.

* Mill run sheets are 10c. per 100 lb. less than base; and primes only, 25c. above base.

Galvanized Sheets, 24 Gage

Pittsburgh, Gary, Sparrows Point, Buffalo, Middletown, Youngstown or Birmingham 3.50c.
Philadelphia, del'd 3.67c.
Granite City 3.60c.
On cars dock Pacific ports 4.10c.
Wrought iron, Pittsburgh 6.10c.

Electrical Sheets

(F.o.b. Pittsburgh)

Base per Lb.

Field grade 3.20c.
Armature 3.55c.
Electrical 4.05c.
Special Motor 4.95c.
Special Dynamo 5.65c.
Transformer 6.15c.
Transformer Special 7.15c.
Transformer Extra Special 7.65c.

Silicon Strip in coils—Sheet price plus silicon sheet extra width extras plus 25c. per 100 lb. for coils. Pacific ports add 70c. a 100 lb.

Long Ternes

No. 24 unassorted 8-lb. coating f.o.b. Pittsburgh or Gary 3.95c.
F.o.b. cars dock Pacific ports 4.65c.

Vitreous Enameling Stock, 20 Gage

Pittsburgh, Gary Youngstown, Middletown or Cleveland 3.35c.
Detroit, del'd 3.45c.
Granite City 3.45c.
On cars dock Pacific ports 3.95c.

TIN MILL PRODUCTS

Black Plate

Pittsburgh 3.15c.
Gary 3.15c.
Granite City 3.50c.
On cars dock Pacific ports, boxed 4.175c.

Tin Plate

Base per Lb.

Standard cokes, Pittsburgh\$5.35
Standard cokes, Gary 5.35
Standard cokes, Granite City 5.55

Special Coated Manufacturing Ternes

Base per Lb.

Pittsburgh\$4.65
Gary 4.65
Granite City 4.85

Roofing Terne Plate

(F.o.b. Pittsburgh)

(Per Package, 112 sheets, 20 x 28 in.)
8-lb. coating I.C.\$12.00
15-lb. coating I.C. 14.00
20-lb. coating I.C. 15.00
25-lb. coating I.C. 16.00
30-lb. coating I.C. 17.25
40-lb. coating I.C. 19.50

HOT ROLLED STRIP

Prices F.o.b. Unless Otherwise Noted (Widths up to 12 in.)

Base per Lb.

Pittsburgh, Chicago, Gary, Cleveland, Middletown, Youngstown or Birmingham 2.15c.
Detroit, delivered 2.25c.

Cooperage Stock

Pittsburgh & Chicago 2.25c.

COLD ROLLED STRIP*

Base per Lb.

Pittsburgh, Youngstown or Cleveland 2.95c.
Chicago 3.05c.
Detroit, delivered 3.05c.
Worcester 3.15c.

* Carbon 0.25 and less.

Commodity Cold Rolled Strip

Pittsburgh, Youngstown or Cleveland 3.10c.
Detroit, delivered 3.20c.
Worcester 3.50c.

COLD ROLLED SPRING STEEL

Pittsburgh

and

Cleveland Worcester

Carbon 0.26-0.50% 2.95c. 3.15c.
Carbon .51-.75 4.30c. 4.50c.
Carbon .76-1.00 6.15c. 6.35c.
Carbon 1.01 to 1.25 8.35c. 8.55c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh, Chicago, Cleveland and Birmingham)

To Manufacturing Trade

Per Lb.

Bright wire 2.60c.
Galvanized wire 3.15c.
Spring wire 3.20c.

To the Trade

Base per Keg

Standard wire nails \$2.45
Coated nails 2.45
Cut nails, carloads 3.60

Base per 100 Lb.

Annealed fence wire \$2.95
Galvanized fence wire 3.35
Polished staples 3.15
Galvanized staples 3.40
Barbed wire, galvanized 3.20
Twisted barbed wire 3.20
Woven wire fence, base column. 67
Single loop bale ties, base col... 56

Note: Birmingham base same on above items, except spring wire.

Add \$4 a ton for Mobile, Ala.; \$3 for New Orleans; \$6 for Lake Charles to above bases, except on galvanized and annealed merchant fence wire, which are \$1 a ton additional in each case.

STEEL AND WROUGHT IRON PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

F.o.b. Pittsburgh only on wrought iron pipe.

Butt Weld

| Steel | Black Galv. | Wrought Iron | Black Galv. |
|--------------|-------------|--------------|-----------------------|
| 1 in. | 56 | 36 | 1/4 & 3/4 + 9 + 30 |
| 1 1/4 to 3/8 | 59 | 43 1/2 | 1/2 24 6 1/2 |
| 1 1/2 | 63 1/2 | 54 | 3/4 30 13 |
| 1 3/4 | 68 1/2 | 58 | 1 & 1 1/4 34 19 |
| 2 to 3 | 68 1/2 | 60 1/2 | 1 1/2 38 21 1/2 |
| | | | 2 37 1/2 21 |

Lap Weld

| | | | | | |
|------------|--------|--------|----------------|--------|--------|
| 2 | 61 | 52 1/2 | 2 | 30 1/2 | 15 |
| 2 1/2 & 3 | 64 | 55 1/2 | 2 1/2 to 3 1/2 | 31 1/2 | 17 1/2 |
| 3 1/2 to 6 | 66 | 57 1/2 | 4 | 33 1/2 | 21 |
| 7 & 8 | 65 | 55 1/2 | 4 1/2 to 8 | 32 1/2 | 20 |
| 9 & 10 | 64 1/2 | 55 | 9 to 12 | 28 1/2 | 15 |
| 11 & 12 | 63 1/2 | 54 | | | |

Butt Weld, extra strong, plain ends

| | | | | | |
|------------|--------|--------|-----------|------|--------|
| 1/8 | 54 1/2 | 41 1/2 | 1/4 & 3/8 | + 10 | + 43 |
| 1/4 to 3/8 | 56 1/2 | 45 1/2 | 1/2 | 25 | 9 |
| 1/2 | 61 1/2 | 53 1/2 | 3/4 | 31 | 15 |
| 3/4 | 65 1/2 | 57 1/2 | 1 to 2 | 38 | 22 1/2 |
| 1 to 3 | 67 | 60 | | | |

Lap Weld, extra strong, plain ends

| | | | | | |
|------------|--------|--------|------------|--------|--------|
| 2 | 59 | 51 1/2 | 2 | 33 1/2 | 18 1/2 |
| 2 1/2 & 3 | 63 | 55 1/2 | 2 1/2 to 4 | 39 | 25 1/2 |
| 3 1/2 to 6 | 66 1/2 | 59 | 4 1/2 to 6 | 37 1/2 | 24 |
| 7 & 8 | 65 1/2 | 56 | 7 & 8 | 33 1/2 | 24 1/2 |
| 9 & 10 | 64 1/2 | 55 | 9 to 12 | 32 | 20 1/2 |
| 11 & 12 | 63 1/2 | 54 | | | |

On butt-weld and lap-weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or \$4 a ton higher than Pittsburgh or Lorain on lap weld and one point lower discount, or \$2 a ton higher, on all butt weld 3 in. and smaller.

Boiler Tubes

Seamless Steel and Lap Weld Commercial Boiler Tubes and Locomotive Tubes. Minimum Wall. (Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

| | Seamless | Hot | Lap | Weld |
|----------------|-----------|---------|---------|-------|
| | Cold | Drawn | Hot | Hot |
| 1 in. o.d. | 13 B.W.G. | \$ 9.01 | \$ 7.82 | |
| 1 1/4 in. o.d. | 13 B.W.G. | 10.67 | 9.26 | |
| 1 1/2 in. o.d. | 13 B.W.G. | 11.79 | 10.23 | 9.72 |
| 1 3/4 in. o.d. | 13 B.W.G. | 13.42 | 11.64 | 11.06 |
| 2 in. o.d. | 13 B.W.G. | 15.03 | 13.04 | 12.38 |
| 2 1/4 in. o.d. | 13 B.W.G. | 16.76 | 14.54 | 13.79 |
| 2 1/2 in. o.d. | 12 B.W.G. | 18.45 | 16.01 | 15.16 |
| 2 3/4 in. o.d. | 12 B.W.G. | 20.21 | 17.54 | 16.58 |
| 3 in. o.d. | 12 B.W.G. | 21.42 | 18.59 | 17.54 |
| 3 1/2 in. o.d. | 12 B.W.G. | 22.48 | 19.50 | 18.35 |
| 3 3/4 in. o.d. | 11 B.W.G. | 28.37 | 24.62 | 23.15 |
| 4 in. o.d. | 10 B.W.G. | 35.20 | 30.54 | 28.66 |
| 4 1/2 in. o.d. | 10 B.W.G. | 43.94 | 37.35 | 35.22 |
| 5 in. o.d. | 9 B.W.G. | 54.01 | 46.87 | 44.25 |
| 6 in. o.d. | 7 B.W.G. | 82.93 | 71.96 | 68.14 |

Extras for less carload quantities:

| | Base |
|--|------|
| 40,000 lb. or ft. or over | 5% |
| 30,000 lb. or ft. to 39,999 lb. or ft. | 10% |
| 20,000 lb. or ft. to 29,999 lb. or ft. | 15% |
| 10,000 lb. or ft. to 19,999 lb. or ft. | 20% |
| 5,000 lb. or ft. to 9,999 lb. or ft. | 30% |
| 2,000 lb. or ft. to 4,999 lb. or ft. | 45% |
| Under 2,000 lb. or ft. | 65% |

CAST IRON WATER PIPE

Per Net Ton

*6-in. and larger, del'd Chicago \$51.00
6-in. and larger, del'd New York 49.00
*6-in. and larger, Birmingham 43.00
6-in. and larger, f.o.b. dock, San Francisco or Los Angeles 52.00
F.o.b. dock, Seattle 52.00
4-in. f.o.b. dock, San Francisco or Los Angeles 55.00
F.o.b. dock, Seattle 52.00

Class "A" and gas pipe, \$3 extra
4-in. pipe is \$3 a ton above 6-in.

Prices for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$42, Birmingham, and \$50 delivered Chicago and 4-in. pipe, \$45, Birmingham, and \$54 delivered Chicago.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List

Machine and carriage bolts:
1/2 in. & 6 in. and smaller .65, 5 and 5*
Larger and longer up to
1 in.60, 10 and 5*
1 1/2 in. and larger60, 5 and 5*
Lag bolts60, 10 and 5
Plow bolts, Nos. 1, 2, 3
and 765, 5 and 5
Hot pressed nuts, and c.p.c.
and t nuts, square or hex.
blank or tapped:
1/2 in. and smaller65 and 5
3/16 in. to 1 in. inclusive .60, 5 and 5
1 1/2 in. and larger60 and 5

* Less carload lots and less than full container quantity. Less carloads lots in full container quantity, an additional 10 per cent discount; carload lots and full container quantity, still another 5 per cent discount.

Semi-finished hexagon units, U.S.S. and S.A.E.

1/2 in. and smaller60, 10 and 5
3/16 in. to 1 in. inclusive .60, 5 and 5
1/2 in. and larger60 and 5
Stove bolts in packages, nuts attached 70 and 5
Stove bolts in packages, with nuts separate 70, 10 and 5
Stove bolts in bulk 80 and 5

On stove bolts freight is allowed to destination on 200 lb. and over.

Large Rivets

(1/2-in. and larger)

Base per 100 Lb.

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham \$3.40

Small Rivets

(7/16-in. and smaller)

Per Cent Off List

F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham65 and 10

Cap and Set Screws

(Freight allowed to destination)

Per Cent Off List

Milled cap screws, 1 in. dia. and smaller 50, 10 and 5
Milled standard set screws, case hardened, 1 in. dia. and smaller 75 and 5
Milled headless set screws, cut thread 3/4 in. and smaller 75
Upset hex. head cap screws U.S.S. or S.A.E. thread 1 in. and smaller 70, 10 and 10
Upset set screws, cup and oval points 80 and 5
Milled studs 65

Alloy and Stainless Steel

Alloy Steel Blooms, Billets and Slabs

F.o.b. Pittsburgh, Chicago, Canton Massillon, Buffalo, Bethlehem.
Base price, \$56.00 a gross ton.

Alloy Steel Bars

F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.
Open-hearth grade, base 2.80c.
Delivered, Detroit 2.90c.

| S.A.E. | Alloy | Differential |
|-----------------------|---------|--------------|
| Series | Numbers | per 100 Lb. |
| 200 (1/2 % Nickel) | | \$0.35 |
| 2100 (1 1/2 % Nickel) | | 0.75 |
| 2300 (3 1/2 % Nickel) | | 1.55 |

| | |
|---|--------|
| 2500 (5% nickel) | \$2.25 |
| 3100 Nickel-chromium | 0.70 |
| 3200 Nickel-chromium | 1.85 |
| 3300 Nickel-chromium | 3.80 |
| 3400 Nickel-chromium | 3.20 |
| 4100 Chromium-molybdenum (0.15 to 0.25 Molybdenum) | 0.55 |
| 4100 Chromium-molybdenum (0.25 to 0.40 Molybdenum) | 0.75 |
| 4600 Nickel - molybdenum (0.20 to 0.30 Mo. 1.50 to 2.00 Ni) | 1.10 |
| 5100 Chrome steel (0.60-0.90 Cr.) | 0.35 |
| 5100 Chrome steel (0.80-1.10 Cr.) | 0.45 |
| 5100 Chromium spring steel | 0.15 |
| 6100 Chromium-vanadium bar | 1.20 |
| 6100 Chromium-vanadium spring steel | 0.85 |
| Chromium-nickel-vanadium | 1.50 |
| Carbon-vanadium | 0.85 |

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. Slabs with a section area of 16 in. and 2 1/2 in. thick or over take the billet base.

Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Gary Cleveland or Buffalo, 3.40c. base per lb. Delivered Detroit, 3.50c., carlots.

CORROSION & HEAT RESISTANT ALLOYS

(Base prices, cents per lb., f.o.b. Pittsburgh)

Chrome-Nickel

| | No. 304 | No. 307 |
|-------------------|---------|---------|
| Forging billets | 21.25c. | 20.40c. |
| Bars | 25c. | 24c. |
| Plates | 29c. | 27c. |
| Structural shapes | 25c. | 24c. |
| Sheets | 36c. | 34c. |
| Hot-rolled strip | 23.50c. | 21.50c. |
| Cold-rolled strip | 30c. | 28c. |
| Drawn wire | 25c. | 24c. |

Straight Chrome

| | No. 410 | No. 430 | No. 442 | No. 446 |
|----------------|---------|---------|---------|---------|
| Bars | 18.50c. | 19c. | 22.50c. | 27.50c. |
| Plates | 21.50c. | 22c. | 25.50c. | 30.50c. |
| Sheets | 26.50c. | 29c. | 32.50c. | 38.50c. |
| Hot strip 17c. | 17.50c. | 23c. | 28c. | |
| Cold stp. 22c. | 22.50c. | 28.50c. | 36.50c. | |

TOOL STEEL

| | |
|--------------------|------|
| High speed | 67c |
| High-carbon-chrome | 43c. |
| Oil-hardening | 24c. |
| Special | 22c. |
| Extra | 18c |
| Regular | 14c. |

Prices for warehouse distribution to all points on or East of Mississippi River are 2c. a lb. higher. West of Mississippi quotations are 2c a lb. higher.

British and Continental

BRITISH

Per Gross Ton
f.o.b. United Kingdom Ports

Ferromanganese, export £20 Nominal
Tin plate, per base box
20s. 3d. to 21s. 6d
Steel bars, open hearth £11
Beams, open-hearth £10 12s. 6d.
Channels, open-hearth £10 17s. 6d
Angles, open-hearth £10 12s. 6d
Black sheets, No. 24 gage. £13
Galvanized sheets, No. 24 gage £16 15s.

CONTINENTAL

Per Gross Ton, Gold £.
f.o.b. Continental Ports

Billets, Thomas Nominal
Wire rods, No. 5 B.W.G. £5 10s.
Steel bars, merchant £5 5s.
Sheet bars Nominal
Plate 1/4 in. and up £6 7s.
Plate 3/16 in. and 5 mm. £6 13s.
Sheet, 1/2 in. £6 9s. 6d.
Beams, Thomas £4 18s.
Angles (Basic) £4 18s.
Hoops and strip, base £5 15s.

RAW MATERIALS PRICES

PIG IRON

No. 2 Foundry

| | |
|---|---------|
| F.o.b. Everett, Mass. | \$21.75 |
| F.o.b. Bethlehem, Birdsboro and Swedeland, Pa., and Sparrows Point, Md. | 21.00 |
| Delivered Brooklyn | 23.50 |
| Delivered Newark or Jersey City | 22.53 |
| Delivered Philadelphia | 21.84 |
| F.o.b. Neville Island, Erie, Pa., Toledo, Chicago and Youngstown* | 20.00 |
| F.o.b. Buffalo | 20.00 |
| F.o.b. Detroit | 20.00 |
| Southern, delivered Cincinnati | 20.06 |
| Northern, delivered, Cincinnati | 20.44 |
| F.o.b. Duluth | 20.50 |
| F.o.b. Provo, Utah | 22.00 |
| Delivered, San Francisco, Los Angeles or Seattle | 26.95 |
| F.o.b. Birmingham* | 16.38 |

* Delivered prices on southern iron for shipment to northern points are 38c. a ton below delivered prices from nearest northern basing point on iron with phosphorus content of 0.70 per cent and over.

Malleable

Base prices on malleable iron are 50c. a ton above No. 2 foundry quotations at Everett, Eastern Pennsylvania furnaces, Erie and Buffalo. Elsewhere they are the same, except at Birmingham and Provo, which are not malleable iron basing points.

Basic

| | |
|---|---------|
| F.o.b. Everett, Mass. | \$21.25 |
| F.o.b. Bethlehem, Birdsboro, Swedeland and Steelton, Pa., and Sparrows Point, Md. | 20.50 |
| F.o.b. Buffalo | 19.00 |
| F.o.b. Neville Island, Erie, Pa., Toledo, Chicago and Youngstown* | 19.50 |
| Delivered Philadelphia | 21.34 |
| Delivered Canton, Ohio | 20.89 |
| Delivered Mansfield, Ohio | 21.44 |
| F.o.b. Birmingham | 15.00 |

Bessemer

| | |
|--|---------|
| F.o.b. Buffalo | \$21.00 |
| F.o.b. Everett, Mass. | 22.75 |
| F.o.b. Bethlehem, Birdsboro and Swedeland, Pa. | 22.00 |
| Delivered Newark or Jersey City | 23.53 |
| Erie, Pa., and Duluth | 21.00 |
| F.o.b. Neville Island, Toledo, Chicago and Youngstown* | 20.50 |
| F.o.b. Birmingham | 21.00 |
| Delivered Cincinnati | 21.11 |
| Delivered Canton, Ohio | 21.89 |
| Delivered Mansfield, Ohio | 22.44 |

Low Phosphorus

| | |
|---|---------|
| Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y. | \$25.50 |
|---|---------|

Gray Forge

| | |
|------------------------------|---------|
| Valley or Pittsburgh furnace | \$19.50 |
|------------------------------|---------|

Charcoal

| | |
|-----------------------|---------|
| Lake Superior furnace | \$25.00 |
| Delivered Chicago | 28.34 |

Canadian Pig Iron

Per Gross Ton

| | |
|-------------------------------|---------|
| Delivered Toronto | |
| No. 1 fdy., sil. 2.25 to 2.75 | \$26.50 |
| No. 2 fdy., sil. 1.75 to 2.25 | 25.50 |
| Malleable | 26.00 |
| Basic | 25.50 |

Delivered Montreal

| | |
|-------------------------------|---------|
| No. 1 fdy., sil. 2.25 to 2.75 | \$27.50 |
| No. 2 fdy., sil. 1.75 to 2.25 | 27.00 |
| Malleable | 27.50 |
| Basic | 27.00 |

FERROALLOYS

Ferromanganese

| | |
|--|---------|
| F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans. | |
| Domestic, 80% (carload) | \$92.50 |

Spiegeleisen

| | |
|-----------------------|---------|
| Per Gross Ton Furnace | |
| Domestic 19 to 21% | \$28.00 |
| Domestic, 26 to 28% | 33.00 |

Electric Ferrosilicon

Per Gross Ton Delivered; Lump Size

| | |
|--------------------------------|----------|
| 50% (carload lots, bulk) | \$69.50* |
| 50% (ton lots in 50 gal. bbl.) | 80.50* |
| 75% (carload lots, bulk) | 126.00* |
| 75% (ton lots in 50 gal. bbl.) | 139.00* |

Bessemer Ferrosilicon

F.o.b. Furnace, Jackson, Ohio Per Gross Ton

| | |
|---|---------|
| 10.00 to 10.50% | \$29.50 |
| For each additional 0.50% silicon up to 12%, 50c. per ton is added. Above 12% add 75c. per ton. | |
| For each unit of manganese over 2%, \$1 per ton additional. Phosphorus 0.75% or over, \$1 per ton additional. | |
| Base prices at Buffalo are \$1.25 a ton higher than at Jackson. | |

Silvery Iron

Per Gross Ton

| | |
|--|---------|
| F.o.b. Jackson, Ohio, 5.00 to 5.50% | \$23.50 |
| For each additional 0.5% silicon up to 12%, 50c. a ton is added. Above 12% add 75c. a ton. | |
| The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson. | |
| Manganese, each unit over 2%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional. | |

Ferrochrome

| | |
|--|----------|
| Per lb. Contained Cr., Delivered Carlots, Lump Size, on Contract | |
| 4 to 6% carbon | 10.50c.* |
| 2% carbon | 16.50c.* |
| 1% carbon | 17.50c.* |
| 0.10% carbon | 19.50c.* |
| 0.06% carbon | 20.00c.* |

Silico-manganese

Per Gross Ton, Delivered, Lump Size, Bulk, on Contract

| | |
|--------------|---------|
| 3% carbon | \$92.75 |
| 2.50% carbon | 97.75 |
| 2% carbon | 102.75 |
| 1% carbon | 112.75 |

Other Ferroalloys

| | |
|---|-------------------|
| Ferrotungsten, per lb. contained W del., carloads, nominally | \$2.00 |
| Ferrotungsten, lots of 500 lbs. nominally | 2.05 |
| Ferrotungsten, smaller lots, nominally | 2.10 |
| Ferrovanadium, contract, per lb. contained V, delivered | \$2.70 to \$2.90† |
| Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y., tons lots. | \$2.25† |
| Ferrocobaltititanium, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace carload and contract per net ton | \$142.50 |
| Ferrocobaltititanium, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace, carload and contract, per net ton | \$157.50 |
| Ferrophosphorus, electric or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage, freight equalized with Rockdale, Tenn., per gross ton | \$58.50 |
| Ferrophosphorus, electrolytic, 23-26% in car lots, f.o.b. Monsanto (Siglo), Tenn., 24%, per gross ton, \$3 unitage, freight equalized with Nashville | \$75.00 |
| Ferromolybdenum, per lb. Mo. f.o.b. furnace | 95c. |
| Calcium molybdate, per lb. Mo. f.o.b. furnace | 80c. |

*Spot prices are \$5 per ton higher
†Spot prices are 10c. per lb. of contained element higher.

ORES

Lake Superior Ores

Delivered Lower Lake Ports Per Gross Ton

| | |
|---------------------------------|--------|
| Old range, Bessemer, 51.50% | \$5.25 |
| Old range, non-Bessemer, 51.50% | 5.10 |
| Mesabi, Bessemer, 51.50% | 5.10 |
| Mesabi, non-Bessemer, 51.50% | 4.95 |
| High phosphorus, 51.50% | 4.85 |

Foreign Ore

C.A.F. Philadelphia or Baltimore Per Unit

| | |
|--|----------------|
| Iron, low phos., copper free, 55 to 58% dry, Algeria, nominal | 17.00c. |
| Iron, low phos., Swedish, average, 68½% iron. Nominally 17 to 18c. | |
| Iron, basic or foundry, Swedish, aver. 65% iron. Nominally 15c. | |
| Iron, basic or foundry, Russian, aver. 65% iron. | Nominal |
| Man., Caucasian, washed | 40c. |
| Man., African, Indian | 35c. |
| Man., African, Indian, 49-51% | Nominally 38c. |
| Man., Brazilian, 46 to 48½% | Nominally 38c. |

Per Short Ton Unit

| | |
|--|------------------|
| Tungsten, Chinese, Wolframite, duty paid, delivered | \$18.50 |
| Tungsten, domestic, scheelite delivered | \$19.00 to 20.00 |
| Chrome ore (lump) c.i.f. Atlantic Seaboard, per gross ton: South African (low grade) | 15.00 |
| Rhodesian, 45% | 21.00 |
| Rhodesian, 48% | 24.50 |
| Turkish, 48-49% | 24.00 to 25.00 |
| Turkish, 45-46% | 22.50 to 23.00 |
| Turkish, 44% | 18.00 to 18.50 |
| Chrome concentrates (Turkish) c.i.f. Atlantic Seaboard, per gross ton: | |
| 50% | 24.50 to 25.50 |
| 48-49% | 24.50 to 25.00 |

FLUORSPAR

Per Net Ton

| | |
|--|------------------|
| Domestic washed gravel, 85-5, f.o.b. Kentucky and Illinois mines, all rail | \$18.00 |
| Domestic, f.o.b. Ohio River landing barges | 18.00 |
| No. 2 lump, 85-5, f.o.b. Kentucky and Ill. mines | \$18.00 to 19.00 |
| Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid | 24.50 |
| Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silicon, f.o.b. Illinois and Kentucky mines | 31.50 |

FUEL OIL

Per Gal.

| | |
|---------------------------------|--------|
| No. 2 or diesel, f.o.b. Bayonne | 4.00c. |
| No. 6, f.o.b. Bayonne | 2.26c. |
| Del'd Chicago, No. 5 Bur. Stds. | 3.25c. |
| Del'd Chicago, No. 6 Bur. Stds. | 2.75c. |
| Del'd Cleve'd, No. 3 distillate | 5.50c. |
| Del'd Cleve'd, No. 4 industrial | 5.00c. |
| Del'd Cleve'd, No. 5 industrial | 3.25c. |
| Del'd Cleve'd, No. 6 industrial | 3.00c. |

COKE

Per Net Ton

| | |
|---|----------------|
| Furnace, f.o.b. Connells-ville, Prompt | \$3.75 |
| Foundry, f.o.b. Connells-ville, Prompt | \$4.75 to 5.50 |
| Foundry, by-product, Chicago ovens | 10.25 |
| Foundry, by-product, del'd New England | 12.50 |
| Foundry, by-product, del'd Newark or Jersey City | 10.88 to 11.40 |
| Foundry, by-product, Philadelphia | 10.95 |
| Foundry, by-product, delivered Cleveland | 10.30 |
| Foundry, by-product, delivered Cincinnati | 9.75 |
| Foundry, Birmingham | 7.50 |
| Foundry, by-product, del'd St. Louis industrial district | 10.75 to 11.00 |
| Foundry, from Birmingham, f.o.b. cars dock, Pacific ports | 14.75 |

THIS WEEK'S MACHINE ...TOOL ACTIVITIES...

... Slight increase in activity seen in domestic business, but bulk of orders is still of foreign origin ... General improvement looked for in August.

Gradual Improvement Seen In Ohio Area

CLEVELAND—Week by week prospects appear to become stronger, and it is confidently expected that by the latter part of August at least orders may be considerably improved. Right now domestic inquiry is fairly well maintained and is diversified. On the foreign side, a little more business appears to be in sight for next month. Several steel plants and fabricators down state are lining up pieces of small equipment and some replacement work is being done by rubber companies. Press makers report that automobile manufacturers are coming into the market and that some other customers are pushing for delivery of equipment which has been on order. Many miscellaneous plants in this vicinity will resume or step up operations in August.

The Chesapeake & Ohio, one of the outstanding tool buyers in the railroad fields, is opening its Russel, Ky., shops Aug. 1, after long idleness, and is increasing its locomotive repair work at Huntington, W. Va. The August schedule is in doubt for the Collinwood, Ohio, shop of the New York Central, but at present 350 men are employed and nine locomotives have been repaired this month.

Bulk of Orders Still Of Foreign Origin

CINCINNATI—Demand for light tools moved upward a bit during the past week, raising the market average a trifle above the preceding period. Some small improvement was noticed in domestic ordering, but the bulk of business is still of foreign origin. Builders of lathes, millers, grinders and broaching machines report business to be fairly good for midsummer with some indication, at least for the week, of domestic expansion. While drilling tools are still without noticeable demand, manufacturers indicate a more serious tone to inquiry and feel more optimistic toward business improvement than a week ago. Heavy machinery is unchanged.

The current orders are not unusual, quantities ranging up to three or four units. Plant operations are unchanged.

Sentiment in Middle West Continues to Improve

CHICAGO—Sentiment continues to improve as volume of inquiries is maintained. Orders are not appreciably better, however, and small tool demand is still lagging. An upturn in machine tool activity usually is preceded by expanding interest in small tools. Twenty-four-hour

activity at the LaPorte, Ind., plant of Allis-Chalmers is expected to result in tool buying soon. Time studies have been made of the machine shop equipment at the local Carnegie-Illinois plants, thus indicating a possibility of large-scale buying from that source.

Greek Representative Buying Tools in the East

NEW YORK—A representative of a Greek munitions plant is in New York buying equipment for making materials of war. An order for 11 lathes was placed with a Cincinnati manufacturer. Another lathe maker received a large order through the Russian buying agency

Welding Society Plans Record Meeting

WITH 45 or more papers at 13 technical sessions, the annual meeting of the American Welding Society, to be held at the Book-Cadillac Hotel, Detroit, Oct. 16-21, will perhaps top all previous meetings of the society.

The convention will open with the president's reception, during the late afternoon of Sunday, Oct. 16. The first technical session, the next morning, will be devoted to welding in construction work, and will be followed in the afternoon by simultaneous sessions on the production welding of small machine parts and industrial research, respectively. Welding and cutting processes and fundamental research are the general topics of simultaneous sessions planned for the morning of Oct. 18. These will be followed by a joint session with the American Society of Mechanical Engineers and a second session devoted to reports of fundamental research. A conference on fundamental research is planned for the evening of Oct. 18.

Welding in machine design and industrial research—the latter featuring a symposium on copper alloy welding—are topics of simultaneous sessions to be held on the morning of Oct. 19.

The morning and afternoon of Oct. 20 will be devoted entirely to discus-

in New York, giving further evidence of an increase in foreign buying.

On the domestic side, ordering has started on the part of a diesel engine builder who has been inquiring for equipment for the past fortnight, and this business will bulk large in the month's volume. There have also been confirming orders for aircraft engine makers. An indication of the better feeling in general industry is the resumption of inquiry activity on the part of an Eastern ball and roller bearing manufacturer, apparently contemplating plant expansion to take care of the production of large size bearings heretofore imported. A move was made in this direction some months ago, then dropped. Business in general is spotty, and some dealers are still finding orders extremely scarce.

Await Upturn in Small Tool Sales

DETROIT—Interest centers now on requirements for small tools for use in 1939 production. So far there has been little activity in this direction, but it is expected to become an important factor in August. The export of seven 35-ton grinding machines by the Hanchett Mfg. Co., Big Rapids, Mich., constitutes a small portion of an order placed by Amtorg Corp. for Soviet Russia, it has been announced.

sion of various applications of welding in the automotive industry. Papers covering ship and boat welding and railroad welding will feature the closing technical sessions, to be held simultaneously on the morning of Oct. 21.

The concluding event of the convention will be the annual business meeting and election of officers. At the society's annual dinner, Oct. 20, W. J. Cameron, Ford Motor Co., will be the principal speaker. A number of plants in the Detroit area will be open for inspection, and time will be available for visiting the National Metals Exposition.

British Opposed to Stabilized Prices

LONDON (By Mail).—As a result of the resignation of the Stanton Ironworks from the Central Pig Iron Producers' Association and the Foundry Pig Iron Producers' Association, it has become known that other important firms are considering resigning from the same bodies and also from the British Iron and Steel Federation.

These concerns are in disagreement with the present policy of stabilizing prices at high rates, fearing that a continuation of this policy will lead to further price cutting by independent American exporters, which would in turn force them out of business.

PLANT EXPANSION AND EQUIPMENT BUYING

◀ NORTH ATLANTIC ▶

Metalfield, Inc., 43-01 Twenty-second Street, Long Island City, manufacturer of metal products, has leased former three-story factory of Russell Playing Card Co., Milltown, N. J., about 82,000 sq. ft. of floor space, for plant and will remove to new location, where increased production will be provided.

Union Free School District, Chateaugay, N. Y., plans manual training department in new two-story high school. Cost about \$750,000. Financing will be arranged through Federal aid. A. W. Inman, Clinton Street, Plattsburg, N. Y., is architect.

Celanese Corp. of America, Inc., 180 Madison Avenue, New York, cellulose rayon products, has secured extension of time from Giles County Chamber of Commerce, Narrows, Va., until not later than Mar. 1, 1939, to proceed with erection of new mill on about 1200 acre tract on New River, between Narrows and Pearisburg, Va., donated to company by Chamber several months ago. Work is scheduled to begin before close of this year. Plant will comprise one and multi-story units, with power house, pumping station, machine shop and other mechanical departments. Cost close to \$4,000,000 with equipment. Initial plant will be expanded later to more than double capacity, with ultimate investment of about \$10,000,000. Company has recently arranged bond issue of \$20,000,000 and will use part of that fund for new mill.

Robert T. Battle Co., Inc., 412 West Forty-eighth Street, New York, manufacturer of electric lighting fixtures and equipment, has leased one-story industrial building at 35-28 Forty-second Street, Long Island City, for new plant and will remove to new location and increase capacity for special lighting equipment for 1939 New York World's Fair, for which company has contract.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 2 for carbon-molybdenum steel tubing (Schedule 4042), gear motors and controllers, and limit switches (Schedule 4032); until Aug. 5, one motor-driven vertical drilling machine (Schedule 4064) for Brooklyn Navy Yard; five pneumatic close-quarter drills, 25 pneumatic grinders, 12 pneumatic vertical grinders, 11 pneumatic chipping hammers, 35 pneumatic scaling hammers (Schedule 4012) for Brooklyn, Philadelphia, Sewall's Point and Mare Island Navy Yards.

Signal Corps Procurement District, Army Base, Fifty-eighth Street and First Avenue, Brooklyn, asks bids until Aug. 2 for 614 axles (Circular 8), 16,000 lin. ft. of conduit (Circular 9).

State Department of Social Welfare, 112 State Street, Albany, N. Y., asks bids until Aug. 3 for new boiler plant at institution at Oxford, N. Y. Cost about \$250,000 with mechanical laundry unit, for which bids are being received at same time. W. E. Haugaard and T. F. Farrell are architect and engineer, respectively, for department.

Commanding Officer, Ordnance Department, Picatinny Arsenal, near Dover, N. J., asks bids until Aug. 1 for gages (Schedule 1081), 6792 hacksaw blades and 108 saw blades (Circular 12).

Radiant Lamp Corp. of New Jersey, Newark, N. J., manufacturer of high-wattage electric lamps, has leased a one-story industrial building at 260-78 Sherman Avenue for new plant.

Stokely Brothers & Co., 2002 South East Street, Indianapolis, food canner and packer, has acquired part of former plant of J. L. Mott Iron Works, Trenton, N. J., and will remodel for new Eastern branch canning plant, with facilities for employment of over 500 persons.

Bureau of Yards and Docks, Navy Department, Washington, will prepare plans for one-

story addition to machine shop at Philadelphia Navy Yard, cost \$625,000 with equipment; also for new transportation and outside weight-handling equipment, cost about \$200,000, and extensions and improvements in electrical distribution system in waterfront area, cost \$150,000. Appropriations have been authorized.

Commanding Officer, Ordnance Department, Frankford Arsenal, Philadelphia, asks bids until Aug. 1 for gages, including plain plug, thread ring, snap, flush pin, taper, etc. (Circular 27); until Aug. 8, 50 to 200 fuzze setters (Circular 9); until Aug. 9, three to five canneluring and resizing machines, caliber 0.30 tracer bullet (Circular 1248), four to seven canneluring and resizing machines, caliber 0.30 tracer bullet (Circular 1247), one or two finish end trim case machines, caliber 0.30 (Circular 1259), one to three inspection case machines, caliber 0.30 (Circular 1256).

Glen Alden Coal Co., Scranton, Pa., plans expansion and improvements in Maxwell colliery, including new breaker, hoisting, loading, conveying and other mechanical equipment. Cost close to \$2,000,000 with machinery.

◀ BUFFALO DISTRICT ▶

White Aircraft Corp., Consolidated Field, Military Road, Buffalo, has approved plans for new one-story plant at airport near LeRoy, N. Y., for parts production and assembling of cabin planes. Cost over \$60,000 with equipment.

Sinclair Refining Co., Wellsville, N. Y., plans early rebuilding of part of local oil refinery recently destroyed by fire. Loss over \$1,000,000 with machinery, tanks and other equipment. William B. Chenault is general manager at refinery. Main offices of company are at 630 Fifth Avenue, New York.

◀ NEW ENGLAND ▶

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 9 for motor-driven air compressors (Schedule 4034) for Boston, Charleston and Puget Sound Navy yards.

Board of Education, Windsor Locks, Conn., plans manual training department in new two-story high school. Cost about \$180,000. Financing is being arranged through Federal aid. Ernest Sibley, Litchfield, Conn., is architect.

Bureau of Yards and Docks, Navy Department, Washington, will prepare plans for one-story addition to paint and oil storage and distributing building at Boston Navy Yard, cost \$100,000 with equipment; also for addition to storage building at naval torpedo station, Newport, R. I., cost \$100,000 with equipment. Appropriations have been authorized.

H. K. Johnson, Manchester, N. H., has plans for one-story machine shop, 50 x 85 ft., at Pleasant and Canal Streets. Cost close to \$40,000 with equipment. A. W. Osberg, 508 Manchester Street, is architect.

City Council, Cambridge, Mass., plans one-story automobile service, repair and garage building near Central Square, for municipal motor trucks and cars. Cost about \$175,000 with equipment. Financing is being arranged through Federal aid. Charles R. Greco, 11 Beacon Street, Boston, is architect.

◀ OHIO AND INDIANA ▶

Department of Public Utilities, City Hall, Cleveland, Frank O. Wallene, director, plans additions to municipal electric power plant at East Fifty-third Street and Lake Erie waterfront, including main building, 50 x 75 ft., and wing extension, 20 x 137 ft., with new equipment for increased capacity. Cost about \$5,460,000. Financing is being arranged through Federal aid. L. A. Quayle, address

noted, is engineer for department. Peter F. Loftus, Oliver Building, Pittsburgh, is consulting engineer.

Contracting Officer, Radio Aircraft Laboratory, Air Corps, Wright Field, Dayton, Ohio, asks bids until Aug. 9 for one three-unit motor-alternator-exciter set (Circular 1).

J. C. Hammer Wine Co., 1653 St. Clair Avenue, Cleveland, wines and liquors, has let general contract to W. H. Dick Co., 15900 Kinsman Road, for one-story addition, 49 x 100 ft., for storage and distribution. Cost close to \$40,000 with equipment. William H. Koehl, Rockefeller Building, is architect.

Contracting Officer, Materiel Division, Air Corps, Wright Field, Dayton, Ohio, asks bids until Aug. 1 for crosscut hand saws (Circular 21), 8900 vibration absorbers (Circular 11); until Aug. 2, 32 bench blocks, 1248 jeweler's screw drivers (Circular 17); until Aug. 15, 1000 to 1600 oxygen cylinder assemblies (Circular 24).

Board of School Trustees, Peru, Ind., plans manual training department in new two-story and basement addition to high school, 169 x 177 ft., for which an appropriation of \$225,000 has been arranged through Federal aid. W. A. Cunningham is secretary.

◀ WASHINGTON DIST. ▶

Purchasing and Contracting Officer, Holabird Quartermaster Depot, Baltimore, asks bids until Aug. 12 for 4175 galvanized steel drums for inflammable liquid, with 4175 flexible nozzle tubes (Circular 398-2).

United States Coast Guard Headquarters, Washington, asks bids until Aug. 3 for one marine type boiler (Circular CG-3487).

Monroe Calculating Machine Co., 555 Mitchell Street, Orange, N. J., has leased two-story building at 32 South Eutaw Street, Baltimore, for new factory branch, storage and distributing plant. Local offices are at 917 Cathedral Street.

General Purchasing Officer, Panama Canal, Washington, asks bids until Aug. 2 for 30,000 lin. ft. of 36-in. copper wire cloth, 6000 lin. ft. of 36-in. steel wire cloth, 10,000 lin. ft. of galvanized steel wire poultry netting, galvanized steel bolts, brass machine screws, brass wood screws, turnbuckles, screw pin chain shackles, steel wood screws, brass machine screw nuts, one rock crushing plant and other equipment (Schedule 3370).

Bureau of Yards and Docks, Navy Department, Washington, asks bids until Aug. 3 for one 1000-hp. watertube boiler, underfeed mechanical stoker, forced draft fan and boiler accessories for power house at Boston Navy Yard (Specifications 8808); until Aug. 10 for addition to overhaul shop at naval operating base, air station, Norfolk, Va. (Specifications 8825). Plans are under way for new trade school and training station building also at Norfolk, cost \$350,000, and for new gasoline storage equipment, cost about \$45,000. Appropriations have been approved.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Aug. 2 for two motor-driven centrifugal pumps and spare parts (Schedule 4026) for Annapolis naval station; until Aug. 5, one motor-driven automatic hydraulic profiling machine and additional tools and equipment (Schedule 4058) for Alexandria, Va., yard; two motor-generator arc welding machines (Schedule 4099), one sand mixer (Schedule 4055) for Philadelphia Navy Yard; one motor-driven floor-type precision quick-change lathe (Schedule 4061), one motor-driven universal grinder (Schedule 4062) for Eastern and Western Navy yards.

◀ SOUTH ATLANTIC ▶

Bureau of Yards and Docks, Navy Department, Washington, will prepare plans for three new steel hangars with repair and reconditioning facilities at naval air station, Pensacola, Fla. Cost \$150,000. Appropriation has been authorized.

City Planning Board, Port Committee, Pensacola, Fla., M. A. Touart, Jr., secretary, plans fund of \$2,750,000 for following municipal buildings and facilities on waterfront: Fruit terminal building and cold storage plant, cost \$750,000 with equipment; one-story cotton compressing plant and warehouse building, cost \$600,000 with equipment; grain elevator,

PROGRESS

IN MANUFACTURING DRILLS AND REAMERS

3 Cle-Forge Drills
Did More Work than **5** of Another Make

TOTAL HOLES
PER 15 GRINDS



**\$5 Saved in Each Dozen
Cle-Forge Drills**

No Cle-Forge Broke, but 2 of "Make A" did

**The Plant's Time Study Department
Conducted the Tests**

**Independent Engineers Checked
and Analyzed the Records**

The Job—to drill 115 eighth-inch holes in each casting, on a single spindle vertical drill press.

The Test—to determine relative performance under actual working conditions, between Cle-Forge High-Speed Drills and a selected competitive drill, designated here as "Make A." Each was used alternately until it had been sharpened and worn dull 5 times. This procedure was repeated until each had been ground, used and dulled 15 times.

No Cle-Forge Breakage. Three Cle-Forge Drills were adequate for the complete test, as none broke. However, two "Make A" drills broke, requiring 5 to finish the job.

Holes Drilled. With 15 grinds each, five "Make A" drills drilled 2877 holes. Under identical conditions, three Cle-Forge Drills drilled 3333 holes. At the same original cost, \$1.86 per dozen, Cle-Forge Drills earned \$5.00 per dozen more than did "Make A."

Even though some of your drilling jobs may, like this one, require small tools performing the simplest operations—how can you *know* without an impartial test, that your costs aren't *still* too high? The "Cleveland" Organization will gladly co-operate with you. The facts outlined briefly here are summarized in Survey 97. A copy will be sent you promptly.

The **CLEVELAND** TWIST DRILL
COMPANY
1242 EAST 49th STREET
CLEVELAND

TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

30 READE ST. NEW YORK 9 NORTH JEFFERSON ST. CHICAGO 654 HOWARD ST. SAN FRANCISCO
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"CLEVELAND" DISTRIBUTORS EVERYWHERE ARE READY TO SERVE YOU

cost about \$700,000 with elevating, conveying, screening and other machinery; extension of municipal dock and one-story warehouse for coastal trade; cost \$550,000. Different units will be equipped with cranes, electric hoists and other material-handling equipment. Financing will be arranged through Federal aid.

◀ SOUTH CENTRAL ▶

Board of Education, Administration Building, Fifth and Hill Streets, Louisville, will ask bids soon on general contract for three-story addition to Ahrens trade school, 546 East First Street. Cost about \$365,000 with equipment. Financing is being arranged through Federal aid. Alfred Weinedel, Washington Building, is architect; Warren & Ronald, Heyburn Building, are mechanical engineers.

City Council, Meridian, Miss., has secured Federal grant and loan of \$1,418,182 for new municipal electric power plant, installation to include three 2500-kw. turbo-generator units, condensers, boilers, pumping machinery and auxiliary equipment; also electrical distribution system, and one-story municipal service, repair and garage building with one-story equipment storage building adjoining.

Bureau of Prisons, Department of Justice, Washington, plans power plant, pumping station, mechanical shops, automobile service and garage building and other mechanical structures at new Federal detention farm and prison, Ashland, Ky. Appropriation of \$1,450,000 has been authorized.

◀ SOUTHWEST ▶

City Council, El Dorado, Ark., plans new municipal electric light and power plant, using diesel engine-generator units and auxiliary equipment. Project will include an electrical distribution system, with power lines for service at municipal waterworks station. Fund of \$663,000 has been secured through Federal loan and grant.

Western States Grocery Co., 2029 Wyandotte Street, Kansas City, Mo., wholesale grocer, will take bids soon on general contract for one-story bulk storage and distributing plant, 170 x 220 ft., at Roanoke Street and Karnes Boulevard. Cost over \$100,000 with equipment. Charles E. Keyser, 609 Minnesota Avenue, Kansas City, Kan., is architect.

Anheuser-Busch, Inc., 721 Pestalozzi Street, St. Louis, has let general contract to Borsari Tank Corp. of America, 1006 Pestalozzi Street, for multi-story addition, 77 x 145 ft., for stock house. Cost close to \$600,000 with equipment.

City Council, Cleveland, Okla., plans new municipal electric power plant, to include diesel engine-generating units with capacity of 540-kw., and auxiliary equipment; also new distribution system. Cost about \$142,000, of which \$63,000 will be secured through Federal grant.

Commanding Officer, Ordnance Department, San Antonio Arsenal, San Antonio, Tex., asks bids until Aug. 11 for one combination oxy-acetylene welding and cutting equipment (Circular 1).

Board of Directors, Lower Colorado River Authority, Littlefield Building, Austin, Tex., asks bids until Aug. 8 for hydraulic turbines and governors, electric generator units and accessory equipment for hydroelectric power plant at Austin dam.

◀ WESTERN PA. DIST. ▶

Meadville Distillery Co., Meadville, Pa., has approved plans for new units for main distillery, storage and distributing buildings and other structures. Cost over \$200,000 with equipment. F. F. Ballinger Co., Ambridge, Pa., is consulting engineer.

Gardner Displays, Inc., 477 Melwood Street, Pittsburgh, manufacturer of signs and displays, has leased two-story building at 461 Melwood Street, about 29,000 sq. ft. of floor space, for expansion.

Francis H. Leggett & Co., Thirteenth Avenue and Twenty-seventh Street, New York, wholesale grocer, has approved plans for new one-story bulk storage and distributing plant, 100 x 300 ft., on Liberty Avenue, Pittsburgh.

Cost close to \$90,000 with equipment. J. F. McWilliams, Jr., Negley Building, Pittsburgh, is architect.

◀ MICHIGAN DISTRICT ▶

Kalamazoo Stove & Furnace Co., Kalamazoo, Mich., plans expansion and improvements, including new building and equipment. Fund of \$250,000 has been authorized for work.

Gibbs Coal Co., 6400 Mack Avenue, Detroit, plans rebuilding of three-story coal storage and distributing plant, recently destroyed by fire. Loss close to \$125,000 with equipment.

Board of Education, Saginaw, Mich., plans manual training department in new three-story and basement Arthur Hill high school, for which bids will be asked soon on general contract. Cost about \$1,200,000. Financing has been arranged through Federal aid. Frantz & Spence, Saginaw, are architects.

Chrysler Corp., 341 Massachusetts Avenue, Detroit, has acquired one-story plant at Chatham, Ont., formerly used by Hayes Wheel Co., for new unit for its Canadian branch plant at Windsor, Ont. Plant is scheduled to be ready early in October, with facilities for about 100 operatives.

Murray Corp. of America, Inc., 7700 Russell Street, Detroit, automobile bodies and other automotive equipment, has let general contract to Esslinger-Misch Co., 159 East Columbia Street, for new loading dock and craneway at plant at Ecorse. Giffels & Vallet, Inc., Marquette Building, is consulting engineer.

◀ MIDDLE WEST ▶

Bureau of Yards and Docks, Navy Department, Washington, will prepare plans for one-story equipment storage and distributing building at naval training school, Great Lakes, Ill. Appropriation of \$150,000 has been authorized for this and a mechanical laundry building. Extensions and improvements also will be made in power house, for which fund of \$50,000 has been authorized.

Wilson Lighting, Inc., 411-13 South Clinton Street, Chicago, electric lighting equipment, wiring devices, etc., has leased an additional floor in building for increased production.

Common Council, Princeton, Minn., has plans for new municipal electric power plant. Cost about \$120,000 with engine-generator units and auxiliary equipment. A bond issue is being arranged. Burlingame, Hitchcock & Estabrook, Sexton Building, Minneapolis, Minn., are consulting engineers.

Coca-Cola Bottling Co., Greeley, Colo., will ask bids on general contract in about 30 days for new two-story and basement mechanical-bottling plant, 50 x 105 ft. Cost over \$65,000 with equipment. Sidney G. Frazier, Greeley National Bank Building, is architect.

Constructing Quartermaster, Chanute Field, Rantoul, Ill., asks bids until Aug. 3 for two air corps school hangars and one air corps flight hangar at local field.

City Council, Blair, Neb., plans extensions and improvements in municipal electric power plant, including two new diesel engine-generator units and auxiliary equipment. Cost about \$120,000. Financing is being arranged through Federal aid.

Gates Rubber Co., 999 South Broadway, Denver, manufacturer of automobile tires, tubes and other rubber products, has plans for two additions, four-stories and basement, 65 x 125 ft., and one-story, 65 x 125 ft., for storage and distribution. Cost over \$100,000 with equipment. William N. Bowman, Insurance Building, is architect.

Hudson, Wis., City Council, has low bid from Leck Construction Co., 211 South Eleventh Street, Minneapolis, Minn., for erecting industrial building, 120 x 340 ft., part two stories and basement, estimated to cost \$150,000 complete, for occupancy by manufacturer, name withheld. W. R. Foss, is city clerk.

Wisconsin State Highway Commission, Madison, has low bid from George Nelson & Co., local, for general contract on construction of State highway laboratory and sign fabricating shop, 65 x 148 ft., two stories and basement, to cost \$175,000. Bids on machinery and other equipment will be taken later. E. L. Roettiger is State highway engineer.

Hudson Mfg. Co., Minneapolis, Minn., manufacturer of agricultural tools, farm and garden supplies, etc., has commissioned Auler, Jensen & Brown, architects, E. R. A. Building, Oshkosh, Wis., to design addition to Oshkosh plant at 80 Harrison Street. Investment is estimated at about \$25,000.

Lakeside Bridge & Steel Co., 3200 West Villard Avenue, Milwaukee, iron and steel fabricator, has been granted permit to build shop addition, 100 x 140 ft., one story, to cost about \$50,000 with equipment. Charles G. Margwarth is general manager.

Milwaukee County Board of Supervisors, Court House, Milwaukee, has purchased two-acre tract at West State and North Sixty-third Streets, Wauwatosa, for proposed new unit of County highway garage, warehouse and maintenance station, to cost \$75,000, and contemplated as PWA project. William F. Cavanaugh is County highway commissioner.

◀ PACIFIC COAST ▶

Lockheed Aircraft Corp., 1705 Victory Place, Burbank, Cal., cabin planes and other aircraft and parts, has plans for one-story addition, 140 x 320 ft., for expansion in assembling division. Cost close to \$150,000 with equipment. John and Donald B. Parkinson, Title Insurance Building, Los Angeles, are architects.

Citrus Union High School District, Glendora, Cal., plans new one-story U-shaped manual training shop at local high school, to include an automobile mechanics shop, welding shop, machine shop and other units, 35 x 106 ft. Cost about \$30,000 exclusive of equipment. John C. Austin, Chamber of Commerce Building, Los Angeles, is architect.

Bureau of Yards and Docks, Navy Department, Washington, asks bids until Aug. 10 for boiler units, capacity of 120,000 lb. of steam per hr., including water-cooled walls, superheater, air preheater, combination oil and gas burners, forced and induced draft fans, combination air ducts, soot blowers and accessory equipment for power house at Mare Island Navy Yard (Specifications 8807). Plans will be prepared soon for one-story freight storage and distributing building, cost about \$100,000 with equipment, and for extensions and improvements in buildings at ammunition depot, cost \$100,000.

State Department of Highways, Capitol Building, Olympia, Wash., plans new group of buildings for Highway Maintenance District No. 3, comprising one-story machine and mechanical shops, motor truck service and garage building, woodworking shop and other mechanical units. Fund of \$107,600 has been secured through Federal aid. Extensions will be made in shops and facilities for No. 2 district, Wenatchee, Wash., and No. 4 district, Vancouver, Wash., to cost about \$100,000 including buildings and equipment.

Swift & Co., Union Stock Yards, Chicago, have let general contract to Austin Co. of California, Inc., Los Angeles, for new meat-packing plant at 3750 Jewel Avenue, Vernon district, comprising three main units, six stories and basement, L-shaped, 144 x 168 ft.; five stories and basement, 115 x 137 ft., and four stories and basement, 124 x 141 ft., with several smaller auxiliary units. Cost close to \$1,000,000 with equipment.

◀ FOREIGN ▶

British-American Tobacco Co., Ltd., London, England, has acquired a large tract at Cap de la Madeleine, near Three Rivers, Que., for new plant for production of aluminum foil, with power plant, machine shop and other mechanical units. Cost close to \$1,200,000, of which approximately \$800,000 will be used for machinery purchases. Work is scheduled to begin in 60 days.

Meteor Tyre & Rubber Co., Ltd., Melbourne, Australia, J. J. Greene, Melbourne, managing director, recently organized with capital of \$500,000, plans new one-story plant near city for production of automobile tires and tubes, and other rubber goods, with power house and auxiliary structures. Cost over \$250,000 with equipment. A. G. R. Williams, Melbourne, is interested in new company and will be a director.